Round Test 2018-1 on

stickiness characterization methods

- FINAL REPORT –

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Stickiness Task Force of the 'International Committee on Cotton Testing Methods' (ICCTM) of the 'International Textile Manufacturers Federation' (ITMF)

Gourlot Jean-Paul [(1)]
Drieling Axel [(2)]
Froese Karsten [(3)]
Lassus Serge [(1)]

[(1)] CIRAD, France, [(2)] FIBRE, Germany, and [(3)] ICA Bremen, Germany

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Round Test on stickiness characterization 2018-1

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Introduction

Confidentiality and use of information from this report

This report is both public and confidential:

- It is public as it will be released on the internet website of the ITMF (www.itmf.org) without providing any private information.

- It also is confidential as we provide Participating Laboratories with their own confidential laboratory LabID code that gives access to understanding each piece of information of the report; indeed with this LabID code number, more information can be extracted from the report. Please note that this LabID will be changed for each test.

The Authors will not be held responsible to any degree for dissemination of the laboratory ID code number after the confidential distribution of their LabID code.

Preparation of cottons and samples

A range of five cottons was selected for their stickiness potential range. Basically, the stickiness level of these cottons is not known a priori and their level will be better known after the test, expecting that these cottons cover a range of stickiness.

All cottons in this test got a similar level of homogenization using an homogenizing machine developed during CFC/ICAC/33 project 'CSITC' project (so called CSITC homogenizing machine). The main goal of this preparation is to ensure that any drawn sample from the original mass would carry the "same" stickiness potential as any other sample for evaluating the laboratory performance, but without affecting too much the size of individual sticky points that could affect some measurement methods.

The degree of this preparation affects the distribution of sticky points within the mass of the fibers. When homogenization is 'perfectly performed', then the sticky point distribution follows Poisson's distribution within the fibers; in other cases, sticky point distribution follows over-dispersed distributions, such as negative binomial distributions. In these conditions, many repetitions of measurements are required to statistically compare laboratory performances or method performances.

From the beginning, we knew that homogenizing the cottons would induce 'preparation', and this was several times reported to us with the results. However, this has been the only way to ensure that all samples would be alike for any given cotton in order to compare method performances or laboratory performances within methods.

Once the cottons were homogenized, samples were drawn from their original cotton mass, and ranges of cottons were constituted for each participating laboratory, whatever the method used. Envelopes were sent out to laboratories in end of June 2018.

All laboratories were supposed to send their results back by August 12, 2018. Practically, due to sample dispatch problems, this date was reported to September 4, 2018. This FINAL REPORT is prepared after this date when most Laboratories who received the material lately sent back their results.

Organizing this round-test, at present running for free, takes time and uses precious materials; therefore we really appreciate when all registered Laboratory who receive RT samples provide us with results.

Organization of this report

As stated in the Contents,

- Individual results provided by Participating Laboratories are reported, cotton by cotton, sorted by method and then by LabID. A mail was sent out in a confidential manner to each participating laboratory for reading this public report, and therefore getting more out of it.

- Statistics are then presented in summary tables or in boxplot charts, cotton by cotton, sorted by method and then by LabID. This section allows the comparison of results by LabID within each method. Both the mean results and the variation of individual results are then highlighted.

- Correlation matrix are given for comparing LabID Mean results cotton by cotton, and sorted by method.

- Charts linking the within-laboratory variances of LabIDs for each method to the calculated mean results per LabID are displayed. Precision and accuracy of individual LabID performance can be deduced from these charts.

- Finally, distances between LabID mean result to the Grand Mean are displayed by method, sorted by method and by LabID.

Conversion of 'laboratories raw records' into numeric data for use in this report

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Answers to this round-test were provided **freely** by laboratories in a table having five columns (one per cotton) and six lines (for potentially recording six results for each cotton) for a total of 30 table cells.

For comparing results between laboratories, results were expected to be reported in a coordinated and harmonized manner within each method. However, for this test also, laboratories reported results the way they probably are used to do in their every day practice: the observation is that the report was not always harmonized within methods (and we know that this is not harmonized between methods).

For allowing a comparison, we were obliged to convert some laboratory records into harmonized numeric values by applying the following rules. When Method was used in the RT, here are the applied conversions:

- For Caramelization : one measurement = one cell. No transformation of the data.
- For Clinitest: >1: was converted into 1.5.
- For Contest and Fibermap: NEW FROM THIS TEST ON: these devices are using the same technology for characterizing stickines and their results are grouped together into one single 'Contest-Fibermap' category from now on. No transformation of the data.
- For GB/T13785-1992: one measurement = one cell. No transformation of the data.
- For H2SD: one measurement = one cell. No transformation of the data.
- For HSI-NIR: one measurement = one cell. No transformation of the data that has been calibrated to H2SD count at the beginning.
- For KOTITI: grades were converted into numeric values as follows:
  - A: 0
  - A+=B-: 1
  - B: 2
  - B+=C-: 3
  - C: 4
  - C+=D-: 5
  - D: 6
  - D+=E-: 7
  - E: 8
  - E+: 9.
- For minicard: ITMF grades 0 to 3 were used for reporting, one measurement = one cell. No transformation of the data.
- For SCT: one measurement = one record = reading of top foil + reading of bottom foil (could reduce the number of recorded cells when needed).

- For TDM-A: for thermo-detecting method: one measurement = one record. No transformation of the data.

All individual results per Method and LabID for each cotton [1]

[1] Footnote

* Results sorted by Method and then by LabID.
* NA or NaN : no results provided.

Table for Cotton A

Meth	LabID	R1	R2	R3	R4	R5	R6	Un
Carameliza	65	1.4	NA	NA	NA	NA	NA	Color degree
Carameliza	70	2.6	NA	NA	NA	NA	NA	Color degree
Carameliza	90	5.5	NA	NA	NA	NA	NA	Color degree
Carameliza	120	1.5	1.5	2.0	1.5	3	3.5	Color degree
Carameliza	155	2.1	1.9	NA	NA	NA	NA	Color degree
Clinitest	15	2.0	2.0	2.0	NA	NA	NA	Color Chart
Contest-Fi	75	238.0	271.0	232.0	265.0	363	269.0	C/F GRADE
Contest-Fi	80	206.0	220.0	174.0	223.0	308	268.0	C/F GRADE
Contest-Fi	110	330.0	346.0	410.0	507.0	468	428.0	C/F GRADE
Contest-Fi	125	321.0	138.0	228.0	236.0	302	NA	C/F GRADE
Contest-Fi	150	134.0	173.0	155.0	NA	NA	NA	C/F GRADE
GB/T13785-	100	2.0	2.0	2.0	2.0	2	2.0	Color degree
H2SD	5	21.0	17.0	12.0	17.0	23	15.0	Sticky point
H2SD	40	23.0	21.0	23.0	18.0	21	25.0	Sticky point
H2SD	60	26.0	23.0	45.0	15.0	15	20.0	Sticky point
H2SD	105	22.0	23.0	19.0	25.0	26	20.0	Sticky point
HSI-NIR	115	96.0	115.0	144.0	97.0	106	111.0	Sticky point
KOTITI	95	8.0	8.0	8.0	8.0	8	8.0	Kotiti grade
Minicard	55	1.2	1.2	0.2	NA	NA	NA	ITMF grades
Minicard	145	3.0	3.0	1.0	NA	NA	NA	ITMF grades
Minicard	175	2.0	2.0	2.0	NA	NA	NA	ITMF grades
Qualitativ	85	4.0	4.0	4.0	NA	NA	NA	Grade
Quantitati	130	0.4	0.5	0.6	NA	NA	NA	Percent
SCT	20	2.0	2.0	2.0	NA	NA	NA	Sticky point
SCT	25	50.0	34.0	43.0	27.0	33	52.0	Sticky point
SCT	30	32.0	28.0	44.0	NA	NA	NA	Sticky point
SCT	35	48.0	56.0	58.0	45.0	50	40.0	Sticky point
SCT	45	32.0	48.0	24.0	33.0	30	27.0	Sticky point
SCT	50	23.0	24.0	35.0	12.0	17	14.0	Sticky point
SCT	135	35.0	32.0	36.0	NA	NA	NA	Sticky point
SCT	140	35.0	27.0	31.0	28.0	47	32.0	Sticky point
SCT	160	20.0	14.0	17.0	14.0	22	19.0	Sticky point
SCT	165	53.0	49.0	50.0	44.0	45	50.0	Sticky point
SCT	170	2.0	3.0	4.0	NA	NA	NA	Sticky point
SCT	180	36.0	35.0	32.0	39.0	31	26.0	Sticky point
TDM-A	10	10.0	3.0	7.0	6.0	7	4.0	Sticky point

Table for Cotton B

Meth	LabID	R1	R2	R3	R4	R5	R6	Un
Carameliza	65	1.5	NA	NA	NA	NA	NA	Color degree
Carameliza	70	2.6	NA	NA	NA	NA	NA	Color degree
Carameliza	90	5.0	NA	NA	NA	NA	NA	Color degree
Carameliza	120	1.0	1.5	2.5	3.5	2	3	Color degree
Carameliza	155	2.8	2.3	NA	NA	NA	NA	Color degree
Clinitest	15	4.0	4.0	4.0	NA	NA	NA	Color Chart
Contest-Fi	75	184.0	195.0	166.0	252.0	149	110	C/F GRADE
Contest-Fi	80	80.0	84.0	111.0	157.0	133	145	C/F GRADE
Contest-Fi	110	231.0	117.0	154.0	229.0	184	116	C/F GRADE
Contest-Fi	125	113.0	76.0	121.0	NA	NA	NA	C/F GRADE
Contest-Fi	150	278.0	255.0	259.0	NA	NA	NA	C/F GRADE
GB/T13785-	100	1.0	1.0	2.0	1.0	2	2	Color degree
H2SD	5	10.0	14.0	4.0	3.0	11	7	Sticky point
H2SD	40	1.0	3.0	1.0	6.0	0	5	Sticky point
H2SD	60	3.0	2.0	4.0	4.0	0	14	Sticky point
H2SD	105	6.0	8.0	7.0	6.0	4	7	Sticky point
HSI-NIR	115	117.0	124.0	117.0	103.0	110	92	Sticky point
KOTITI	95	8.0	8.0	8.0	8.0	8	8	Kotiti grade
Minicard	55	0.5	2.0	2.0	NA	NA	NA	ITMF grades
Minicard	145	2.0	1.0	3.0	NA	NA	NA	ITMF grades
Minicard	175	1.0	1.0	0.0	NA	NA	NA	ITMF grades
Qualitativ	85	2.0	2.0	2.0	NA	NA	NA	Grade
Quantitati	130	0.3	0.4	0.3	NA	NA	NA	Percent
SCT	20	3.0	3.0	3.0	NA	NA	NA	Sticky point
SCT	25	12.0	13.0	11.0	12.0	4	11	Sticky point
SCT	30	3.0	10.0	0.0	NA	NA	NA	Sticky point
SCT	35	9.0	9.0	5.0	14.0	12	13	Sticky point
SCT	45	0.0	7.0	2.0	4.0	0	7	Sticky point
SCT	50	3.0	0.0	1.0	2.0	1	0	Sticky point
SCT	135	4.0	6.0	2.0	NA	NA	NA	Sticky point
SCT	140	12.0	17.0	20.0	19.0	17	16	Sticky point
SCT	160	7.0	4.0	5.0	4.0	6	5	Sticky point
SCT	165	24.0	20.0	22.0	18.0	18	17	Sticky point
SCT	170	1.0	1.0	0.0	NA	NA	NA	Sticky point
SCT	180	7.0	5.0	6.0	4.0	5	9	Sticky point
TDM-A	10	0.0	1.0	0.0	0.0	0	0	Sticky point

Table for Cotton C

Meth	LabID	R1	R2	R3	R4	R5	R6	Un
Carameliza	65	2.0	NA	NA	NA	NA	NA	Color degree
Carameliza	70	2.6	NA	NA	NA	NA	NA	Color degree
Carameliza	90	5.3	NA	NA	NA	NA	NA	Color degree
Carameliza	120	1.5	1.5	1.5	1.5	2	2	Color degree
Carameliza	155	2.5	2.9	NA	NA	NA	NA	Color degree
Clinitest	15	0.0	0.0	0.0	NA	NA	NA	Color Chart
Contest-Fi	75	465.0	322.0	495.0	477.0	438	469	C/F GRADE
Contest-Fi	80	373.0	339.0	296.0	349.0	391	454	C/F GRADE
Contest-Fi	110	520.0	498.0	503.0	424.0	452	460	C/F GRADE
Contest-Fi	125	408.0	493.0	332.0	NA	NA	NA	C/F GRADE
Contest-Fi	150	429.0	411.0	375.0	NA	NA	NA	C/F GRADE
GB/T13785-	100	2.0	2.0	1.0	1.0	3	2	Color degree
H2SD	5	16.0	20.0	10.0	19.0	21	19	Sticky point
H2SD	40	18.0	34.0	12.0	21.0	21	25	Sticky point
H2SD	60	20.0	27.0	29.0	19.0	31	20	Sticky point
H2SD	105	20.0	43.0	27.0	30.0	29	37	Sticky point
HSI-NIR	115	106.0	115.0	108.0	112.0	122	114	Sticky point
KOTITI	95	8.0	8.0	8.0	8.0	8	8	Kotiti grade
Minicard	55	0.8	1.2	0.5	NA	NA	NA	ITMF grades
Minicard	145	3.0	2.0	3.0	NA	NA	NA	ITMF grades
Minicard	175	3.0	2.0	2.0	NA	NA	NA	ITMF grades
Qualitativ	85	2.0	2.0	2.0	NA	NA	NA	Grade
Quantitati	130	0.3	0.4	0.4	NA	NA	NA	Percent
SCT	20	0.0	0.0	0.0	NA	NA	NA	Sticky point
SCT	25	86.0	68.0	55.0	59.0	72	73	Sticky point
SCT	30	41.0	41.0	37.0	NA	NA	NA	Sticky point
SCT	35	68.0	66.0	83.0	68.0	80	75	Sticky point
SCT	45	70.0	68.0	33.0	41.0	38	54	Sticky point
SCT	50	49.0	39.0	34.0	45.0	45	34	Sticky point
SCT	135	37.0	57.0	35.0	NA	NA	NA	Sticky point
SCT	140	54.0	68.0	44.0	36.0	25	84	Sticky point
SCT	160	17.0	27.0	28.0	23.0	21	24	Sticky point
SCT	165	62.0	65.0	67.0	64.0	72	66	Sticky point
SCT	170	9.0	5.0	3.0	NA	NA	NA	Sticky point
SCT	180	31.0	25.0	28.0	33.0	34	27	Sticky point
TDM-A	10	0.0	3.0	4.0	6.0	3	5	Sticky point

Table for Cotton D

Meth	LabID	R1	R2	R3	R4	R5	R6	Un
Carameliza	65	1.7	NA	NA	NA	NA	NA	Color degree
Carameliza	70	2.3	NA	NA	NA	NA	NA	Color degree
Carameliza	90	4.5	NA	NA	NA	NA	NA	Color degree
Carameliza	120	3.0	4.0	4.0	2.5	2.5	2	Color degree
Carameliza	155	2.4	2.1	NA	NA	NA	NA	Color degree
Clinitest	15	0.0	1.0	0.0	NA	NA	NA	Color Chart
Contest-Fi	75	621.0	444.0	585.0	471.0	554.0	342	C/F GRADE
Contest-Fi	80	377.0	344.0	391.0	451.0	445.0	392	C/F GRADE
Contest-Fi	110	643.0	532.0	463.0	624.0	658.0	612	C/F GRADE
Contest-Fi	125	439.0	369.0	390.0	NA	NA	NA	C/F GRADE
Contest-Fi	150	182.0	177.0	121.0	NA	NA	NA	C/F GRADE
GB/T13785-	100	3.0	4.0	3.0	3.0	4.0	4	Color degree
H2SD	5	27.0	42.0	32.0	12.0	9.0	31	Sticky point
H2SD	40	5.0	5.0	9.0	7.0	14.0	9	Sticky point
H2SD	60	35.0	36.0	25.0	26.0	34.0	35	Sticky point
H2SD	105	39.0	47.0	45.0	43.0	40.0	37	Sticky point
HSI-NIR	115	88.0	103.0	101.0	99.0	126.0	109	Sticky point
KOTITI	95	8.0	8.0	8.0	8.0	8.0	8	Kotiti grade
Minicard	55	2.0	0.8	1.0	NA	NA	NA	ITMF grades
Minicard	145	2.0	3.0	3.0	NA	NA	NA	ITMF grades
Minicard	175	3.0	3.0	3.0	NA	NA	NA	ITMF grades
Qualitativ	85	3.0	3.0	3.0	NA	NA	NA	Grade
Quantitati	130	0.6	0.5	0.4	NA	NA	NA	Percent
SCT	20	1.0	0.0	1.0	NA	NA	NA	Sticky point
SCT	25	94.0	77.0	64.0	85.0	62.0	82	Sticky point
SCT	30	40.0	36.0	57.0	NA	NA	NA	Sticky point
SCT	35	57.0	54.0	68.0	57.0	76.0	56	Sticky point
SCT	45	42.0	64.0	40.0	48.0	44.0	67	Sticky point
SCT	50	9.0	50.0	45.0	14.0	43.0	28	Sticky point
SCT	135	70.0	53.0	77.0	NA	NA	NA	Sticky point
SCT	140	61.0	37.0	26.0	36.0	50.0	65	Sticky point
SCT	160	30.0	17.0	29.0	25.0	24.0	27	Sticky point
SCT	165	57.0	62.0	62.0	58.0	66.0	69	Sticky point
SCT	170	17.0	10.0	5.0	NA	NA	NA	Sticky point
SCT	180	33.0	28.0	25.0	27.0	20.0	28	Sticky point
TDM-A	10	2.0	2.0	4.0	3.0	3.0	4	Sticky point

Table for Cotton E

Meth	LabID	R1	R2	R3	R4	R5	R6	Un
Carameliza	65	1.4	NA	NA	NA	NA	NA	Color degree
Carameliza	70	2.2	NA	NA	NA	NA	NA	Color degree
Carameliza	90	4.5	NA	NA	NA	NA	NA	Color degree
Carameliza	120	1.5	1.5	1.5	1.5	1.5	2	Color degree
Carameliza	155	1.8	2.1	NA	NA	NA	NA	Color degree
Clinitest	15	1.0	1.0	1.0	NA	NA	NA	Color Chart
Contest-Fi	75	209.0	272.0	182.0	87.0	102.0	88	C/F GRADE
Contest-Fi	80	112.0	38.0	34.0	105.0	77.0	92	C/F GRADE
Contest-Fi	110	168.0	115.0	211.0	87.0	204.0	78	C/F GRADE
Contest-Fi	125	109.0	98.0	91.0	NA	NA	NA	C/F GRADE
Contest-Fi	150	74.0	73.0	87.0	NA	NA	NA	C/F GRADE
GB/T13785-	100	1.0	1.0	1.0	1.0	3.0	2	Color degree
H2SD	5	15.0	5.0	3.0	4.0	5.0	8	Sticky point
H2SD	40	1.0	2.0	2.0	2.0	1.0	1	Sticky point
H2SD	60	9.0	22.0	14.0	12.0	11.0	19	Sticky point
H2SD	105	6.0	8.0	10.0	11.0	18.0	14	Sticky point
HSI-NIR	115	109.0	125.0	119.0	110.0	115.0	108	Sticky point
KOTITI	95	6.0	6.0	6.0	6.0	9.0	9	Kotiti grade
Minicard	55	0.0	0.2	0.0	0.2	NA	NA	ITMF grades
Minicard	145	1.0	1.0	1.0	NA	NA	NA	ITMF grades
Minicard	175	2.0	2.0	1.0	NA	NA	NA	ITMF grades
Qualitativ	85	3.0	3.0	3.0	NA	NA	NA	Grade
Quantitati	130	0.3	0.3	0.3	NA	NA	NA	Percent
SCT	20	0.0	0.0	0.0	NA	NA	NA	Sticky point
SCT	25	22.0	17.0	30.0	14.0	13.0	15	Sticky point
SCT	30	20.0	14.0	10.0	NA	NA	NA	Sticky point
SCT	35	16.0	12.0	18.0	20.0	16.0	21	Sticky point
SCT	45	9.0	15.0	9.0	9.0	4.0	9	Sticky point
SCT	50	7.0	8.0	9.0	10.0	6.0	14	Sticky point
SCT	135	12.0	14.0	16.0	NA	NA	NA	Sticky point
SCT	140	22.0	12.0	18.0	17.0	23.0	30	Sticky point
SCT	160	17.0	13.0	12.0	13.0	14.0	13	Sticky point
SCT	165	13.0	14.0	10.0	11.0	12.0	14	Sticky point
SCT	170	3.0	1.0	0.0	NA	NA	NA	Sticky point
SCT	180	9.0	10.0	12.0	8.0	14.0	17	Sticky point
TDM-A	10	6.0	3.0	6.0	2.0	2.0	4	Sticky point

Statistics per Method, LabID for cottons A, B and C [2]

[2]Footnote

* Mean of all readings per LabID (NA excluded, expressed in Unit).
* Var = variance taking care of all available readings per LabID (NA excluded).
* CV = CV between reading per LabID expressed in percent.
* GMean = Grand Mean of all laboratory means, calculated by Method.
* Delta = LabID Mean - GMean.
* NA or NaN : no results provided.

Table for Cotton A

Meth	LabID	MeanIntraLab	Un	VarIntraLab	CVIntraLab	MeanInterLab	Delta
Carameliza	65	1.4	Color degree	NA	NA	2.7	-1.3
Carameliza	70	2.6	Color degree	NA	NA	2.7	-0.1
Carameliza	90	5.5	Color degree	NA	NA	2.7	2.8
Carameliza	120	2.2	Color degree	0.8	40.4	2.7	-0.6
Carameliza	155	2.0	Color degree	0.0	7.1	2.7	-0.7
Clinitest	15	2.0	Color Chart	0.0	0.0	2.0	0.0
Contest-Fi	75	273.0	C/F GRADE	2218.0	17.3	264.0	9.0
Contest-Fi	80	233.2	C/F GRADE	2265.8	20.4	264.0	-30.8
Contest-Fi	110	414.8	C/F GRADE	4690.6	16.5	264.0	150.8
Contest-Fi	125	245.0	C/F GRADE	5211.0	29.5	264.0	-19.0
Contest-Fi	150	154.0	C/F GRADE	381.0	12.7	264.0	-110.0
GB/T13785-	100	2.0	Color degree	0.0	0.0	2.0	0.0
H2SD	5	17.5	Sticky point	15.9	22.8	21.5	-4.0
H2SD	40	21.8	Sticky point	5.8	11.0	21.5	0.4
H2SD	60	24.0	Sticky point	124.8	46.5	21.5	2.5
H2SD	105	22.5	Sticky point	7.5	12.2	21.5	1.0
HSI-NIR	115	111.5	Sticky point	309.9	15.8	111.5	0.0
KOTITI	95	8.0	Kotiti grade	0.0	0.0	8.0	0.0
Minicard	55	0.9	ITMF grades	0.3	63.0	1.8	-0.8
Minicard	145	2.3	ITMF grades	1.3	49.5	1.8	0.6
Minicard	175	2.0	ITMF grades	0.0	0.0	1.8	0.2
Qualitativ	85	4.0	Grade	0.0	0.0	4.0	0.0
Quantitati	130	0.5	Percent	0.0	10.4	0.5	0.0
SCT	20	2.0	Sticky point	0.0	0.0	29.1	-27.1
SCT	25	39.8	Sticky point	101.4	25.3	29.1	10.7
SCT	30	34.7	Sticky point	69.3	24.0	29.1	5.6
SCT	35	49.5	Sticky point	45.5	13.6	29.1	20.4
SCT	45	32.3	Sticky point	69.9	25.9	29.1	3.2
SCT	50	20.8	Sticky point	71.0	40.4	29.1	-8.3
SCT	135	34.3	Sticky point	4.3	6.1	29.1	5.2
SCT	140	33.3	Sticky point	53.1	21.9	29.1	4.2
SCT	160	17.7	Sticky point	10.7	18.5	29.1	-11.4
SCT	165	48.5	Sticky point	11.5	7.0	29.1	19.4
SCT	170	3.0	Sticky point	1.0	33.3	29.1	-26.1
SCT	180	33.2	Sticky point	20.6	13.7	29.1	4.1
TDM-A	10	6.2	Sticky point	6.2	40.3	6.2	0.0

Table for Cotton B

Meth	LabID	MeanIntraLab	Un	VarIntraLab	CVIntraLab	MeanInterLab	Delta
Carameliza	65	1.5	Color degree	NA	NA	2.8	-1.3
Carameliza	70	2.6	Color degree	NA	NA	2.8	-0.2
Carameliza	90	5.0	Color degree	NA	NA	2.8	2.2
Carameliza	120	2.2	Color degree	0.9	41.6	2.8	-0.5
Carameliza	155	2.5	Color degree	0.1	13.9	2.8	-0.2
Clinitest	15	4.0	Color Chart	0.0	0.0	4.0	0.0
Contest-Fi	75	176.0	C/F GRADE	2277.2	27.1	166.7	9.3
Contest-Fi	80	118.3	C/F GRADE	1024.7	27.1	166.7	-48.4
Contest-Fi	110	171.8	C/F GRADE	2671.8	30.1	166.7	5.1
Contest-Fi	125	103.3	C/F GRADE	576.3	23.2	166.7	-63.4
Contest-Fi	150	264.0	C/F GRADE	151.0	4.7	166.7	97.3
GB/T13785-	100	1.5	Color degree	0.3	36.5	1.5	0.0
H2SD	5	8.2	Sticky point	18.2	52.2	5.4	2.8
H2SD	40	2.7	Sticky point	5.9	90.8	5.4	-2.7
H2SD	60	4.5	Sticky point	23.9	108.6	5.4	-0.9
H2SD	105	6.3	Sticky point	1.9	21.6	5.4	0.9
HSI-NIR	115	110.5	Sticky point	133.1	10.4	110.5	0.0
KOTITI	95	8.0	Kotiti grade	0.0	0.0	8.0	0.0
Minicard	55	1.5	ITMF grades	0.8	57.7	1.4	0.1
Minicard	145	2.0	ITMF grades	1.0	50.0	1.4	0.6
Minicard	175	0.7	ITMF grades	0.3	86.6	1.4	-0.7
Qualitativ	85	2.0	Grade	0.0	0.0	2.0	0.0
Quantitati	130	0.3	Percent	0.0	16.4	0.3	0.0
SCT	20	3.0	Sticky point	0.0	0.0	7.1	-4.1
SCT	25	10.5	Sticky point	10.7	31.2	7.1	3.4
SCT	30	4.3	Sticky point	26.3	118.4	7.1	-2.8
SCT	35	10.3	Sticky point	11.1	32.2	7.1	3.2
SCT	45	3.3	Sticky point	10.3	96.1	7.1	-3.8
SCT	50	1.2	Sticky point	1.4	100.2	7.1	-5.9
SCT	135	4.0	Sticky point	4.0	50.0	7.1	-3.1
SCT	140	16.8	Sticky point	7.8	16.6	7.1	9.7
SCT	160	5.2	Sticky point	1.4	22.6	7.1	-1.9
SCT	165	19.8	Sticky point	7.4	13.7	7.1	12.7
SCT	170	0.7	Sticky point	0.3	86.6	7.1	-6.4
SCT	180	6.0	Sticky point	3.2	29.8	7.1	-1.1
TDM-A	10	0.2	Sticky point	0.2	244.9	0.2	0.0

Table for Cotton C

Meth	LabID	MeanIntraLab	Un	VarIntraLab	CVIntraLab	MeanInterLab	Delta
Carameliza	65	2.0	Color degree	NA	NA	2.9	-0.9
Carameliza	70	2.6	Color degree	NA	NA	2.9	-0.3
Carameliza	90	5.3	Color degree	NA	NA	2.9	2.4
Carameliza	120	1.7	Color degree	0.1	15.5	2.9	-1.2
Carameliza	155	2.7	Color degree	0.1	10.5	2.9	-0.2
Clinitest	15	0.0	Color Chart	0.0	NaN	0.0	0.0
Contest-Fi	75	444.3	C/F GRADE	3935.1	14.1	420.7	23.6
Contest-Fi	80	367.0	C/F GRADE	2866.0	14.6	420.7	-53.7
Contest-Fi	110	476.2	C/F GRADE	1337.0	7.7	420.7	55.5
Contest-Fi	125	411.0	C/F GRADE	6487.0	19.6	420.7	-9.7
Contest-Fi	150	405.0	C/F GRADE	756.0	6.8	420.7	-15.7
GB/T13785-	100	1.8	Color degree	0.6	41.1	1.8	0.0
H2SD	5	17.5	Sticky point	16.3	23.1	23.7	-6.2
H2SD	40	21.8	Sticky point	54.2	33.7	23.7	-1.8
H2SD	60	24.3	Sticky point	27.9	21.7	23.7	0.7
H2SD	105	31.0	Sticky point	64.4	25.9	23.7	7.3
HSI-NIR	115	112.8	Sticky point	32.2	5.0	112.8	0.0
KOTITI	95	8.0	Kotiti grade	0.0	0.0	8.0	0.0
Minicard	55	0.8	ITMF grades	0.1	45.8	1.9	-1.1
Minicard	145	2.7	ITMF grades	0.3	21.7	1.9	0.7
Minicard	175	2.3	ITMF grades	0.3	24.7	1.9	0.4
Qualitativ	85	2.0	Grade	0.0	0.0	2.0	0.0
Quantitati	130	0.4	Percent	0.0	8.6	0.4	0.0
SCT	20	0.0	Sticky point	0.0	NaN	41.1	-41.1
SCT	25	68.8	Sticky point	122.2	16.1	41.1	27.7
SCT	30	39.7	Sticky point	5.3	5.8	41.1	-1.4
SCT	35	73.3	Sticky point	50.3	9.7	41.1	32.2
SCT	45	50.7	Sticky point	250.3	31.2	41.1	9.6
SCT	50	41.0	Sticky point	39.6	15.3	41.1	-0.1
SCT	135	43.0	Sticky point	148.0	28.3	41.1	1.9
SCT	140	51.8	Sticky point	466.6	41.7	41.1	10.8
SCT	160	23.3	Sticky point	16.3	17.3	41.1	-17.8
SCT	165	66.0	Sticky point	11.6	5.2	41.1	24.9
SCT	170	5.7	Sticky point	9.3	53.9	41.1	-35.4
SCT	180	29.7	Sticky point	12.7	12.0	41.1	-11.4
TDM-A	10	3.5	Sticky point	4.3	59.2	3.5	0.0

Table for Cotton D

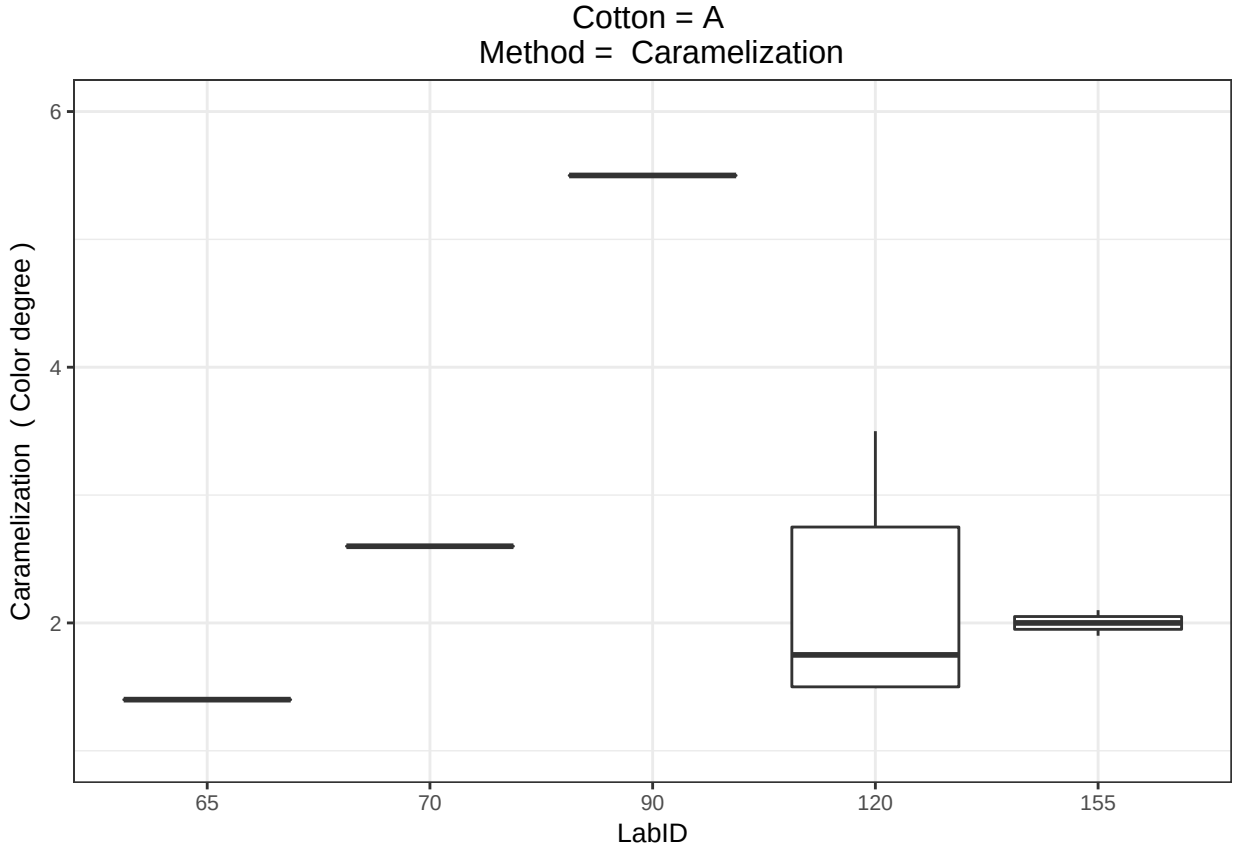
Meth	LabID	MeanIntraLab	Un	VarIntraLab	CVIntraLab	MeanInterLab	Delta
Carameliza	65	1.7	Color degree	NA	NA	2.7	-1.0
Carameliza	70	2.3	Color degree	NA	NA	2.7	-0.5
Carameliza	90	4.5	Color degree	NA	NA	2.7	1.8
Carameliza	120	3.0	Color degree	0.7	27.9	2.7	0.3
Carameliza	155	2.2	Color degree	0.0	9.4	2.7	-0.5
Clinitest	15	0.3	Color Chart	0.3	173.2	0.3	0.0
Contest-Fi	75	502.8	C/F GRADE	10735.0	20.6	410.2	92.7
Contest-Fi	80	400.0	C/F GRADE	1687.2	10.3	410.2	-10.2
Contest-Fi	110	588.7	C/F GRADE	5711.1	12.8	410.2	178.5
Contest-Fi	125	399.3	C/F GRADE	1290.3	9.0	410.2	-10.8
Contest-Fi	150	160.0	C/F GRADE	1147.0	21.2	410.2	-250.2
GB/T13785-	100	3.5	Color degree	0.3	15.6	3.5	0.0
H2SD	5	25.5	Sticky point	160.3	49.7	26.8	-1.3
H2SD	40	8.2	Sticky point	11.4	41.3	26.8	-18.7
H2SD	60	31.8	Sticky point	24.6	15.6	26.8	5.0
H2SD	105	41.8	Sticky point	14.6	9.1	26.8	15.0
HSI-NIR	115	104.3	Sticky point	159.9	12.1	104.3	0.0
KOTITI	95	8.0	Kotiti grade	0.0	0.0	8.0	0.0
Minicard	55	1.2	ITMF grades	0.4	52.9	2.3	-1.1
Minicard	145	2.7	ITMF grades	0.3	21.7	2.3	0.4
Minicard	175	3.0	ITMF grades	0.0	0.0	2.3	0.7
Qualitativ	85	3.0	Grade	0.0	0.0	3.0	0.0
Quantitati	130	0.5	Percent	0.0	23.1	0.5	0.0
SCT	20	0.7	Sticky point	0.3	86.6	42.0	-41.3
SCT	25	77.3	Sticky point	154.3	16.1	42.0	35.4
SCT	30	44.3	Sticky point	124.3	25.2	42.0	2.4
SCT	35	61.3	Sticky point	75.9	14.2	42.0	19.4
SCT	45	50.8	Sticky point	137.0	23.0	42.0	8.9
SCT	50	31.5	Sticky point	296.3	54.6	42.0	-10.5
SCT	135	66.7	Sticky point	152.3	18.5	42.0	24.7
SCT	140	45.8	Sticky point	236.6	33.6	42.0	3.9
SCT	160	25.3	Sticky point	21.9	18.5	42.0	-16.6
SCT	165	62.3	Sticky point	21.1	7.4	42.0	20.4
SCT	170	10.7	Sticky point	36.3	56.5	42.0	-31.3
SCT	180	26.8	Sticky point	18.2	15.9	42.0	-15.1
TDM-A	10	3.0	Sticky point	0.8	29.8	3.0	0.0

Table for Cotton E

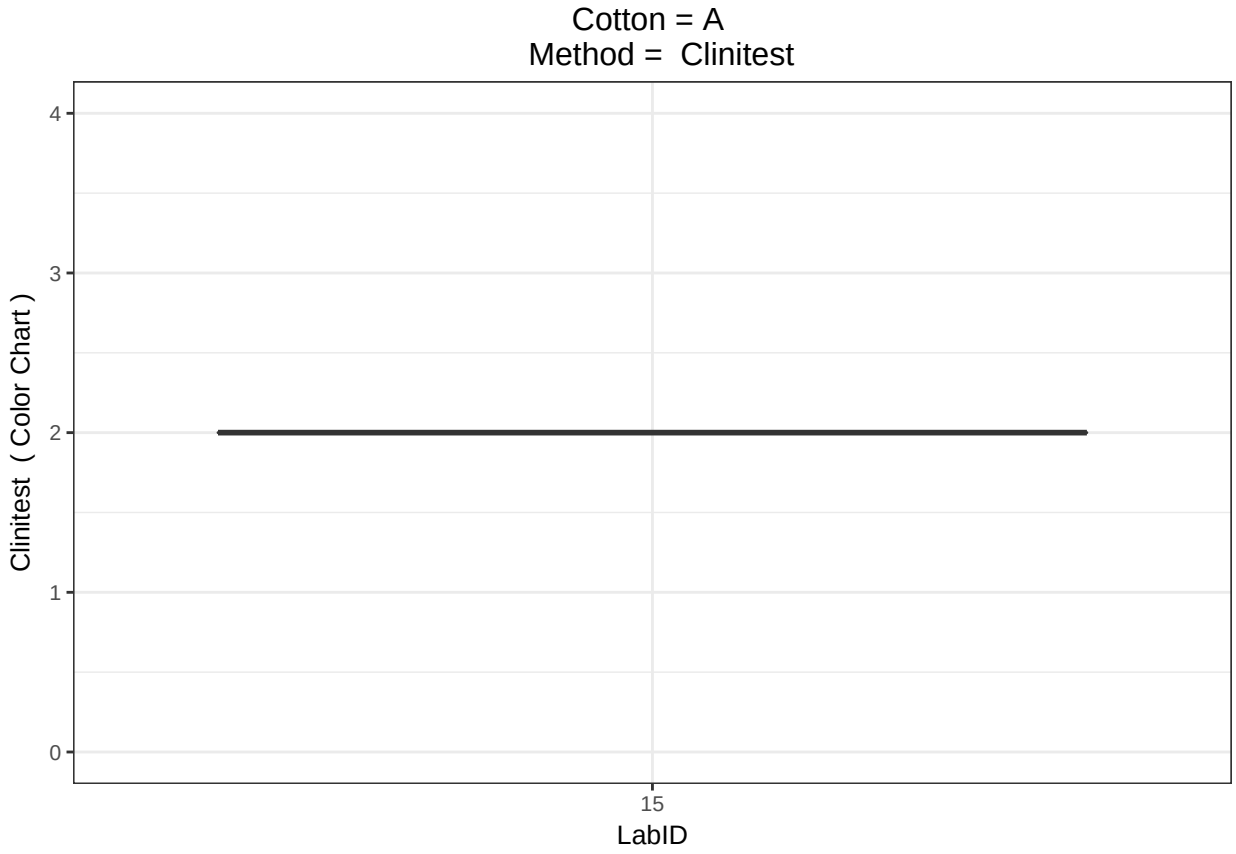
Meth	LabID	MeanIntraLab	Un	VarIntraLab	CVIntraLab	MeanInterLab	Delta
Carameliza	65	1.4	Color degree	NA	NA	2.3	-0.9
Carameliza	70	2.2	Color degree	NA	NA	2.3	-0.1
Carameliza	90	4.5	Color degree	NA	NA	2.3	2.2
Carameliza	120	1.6	Color degree	0.0	12.9	2.3	-0.7
Carameliza	155	2.0	Color degree	0.0	10.9	2.3	-0.4
Clinitest	15	1.0	Color Chart	0.0	0.0	1.0	0.0
Contest-Fi	75	156.7	C/F GRADE	5847.9	48.8	110.8	45.8
Contest-Fi	80	76.3	C/F GRADE	1120.3	43.8	110.8	-34.5
Contest-Fi	110	143.8	C/F GRADE	3422.2	40.7	110.8	33.0
Contest-Fi	125	99.3	C/F GRADE	82.3	9.1	110.8	-11.5
Contest-Fi	150	78.0	C/F GRADE	61.0	10.0	110.8	-32.8
GB/T13785-	100	1.5	Color degree	0.7	55.8	1.5	0.0
H2SD	5	6.7	Sticky point	19.5	66.2	8.5	-1.8
H2SD	40	1.5	Sticky point	0.3	36.5	8.5	-7.0
H2SD	60	14.5	Sticky point	25.1	34.6	8.5	6.0
H2SD	105	11.2	Sticky point	18.6	38.6	8.5	2.7
HSI-NIR	115	114.3	Sticky point	44.7	5.8	114.3	0.0
KOTITI	95	7.0	Kotiti grade	2.4	22.1	7.0	0.0
Minicard	55	0.1	ITMF grades	0.0	115.5	0.9	-0.8
Minicard	145	1.0	ITMF grades	0.0	0.0	0.9	0.1
Minicard	175	1.7	ITMF grades	0.3	34.6	0.9	0.7
Qualitativ	85	3.0	Grade	0.0	0.0	3.0	0.0
Quantitati	130	0.3	Percent	0.0	12.8	0.3	0.0
SCT	20	0.0	Sticky point	0.0	NaN	11.8	-11.8
SCT	25	18.5	Sticky point	41.9	35.0	11.8	6.7
SCT	30	14.7	Sticky point	25.3	34.3	11.8	2.8
SCT	35	17.2	Sticky point	10.6	18.9	11.8	5.3
SCT	45	9.2	Sticky point	12.2	38.1	11.8	-2.7
SCT	50	9.0	Sticky point	8.0	31.4	11.8	-2.8
SCT	135	14.0	Sticky point	4.0	14.3	11.8	2.2
SCT	140	20.3	Sticky point	37.9	30.3	11.8	8.5
SCT	160	13.7	Sticky point	3.1	12.8	11.8	1.8
SCT	165	12.3	Sticky point	2.7	13.2	11.8	0.5
SCT	170	1.3	Sticky point	2.3	114.6	11.8	-10.5
SCT	180	11.7	Sticky point	11.5	29.0	11.8	-0.2
TDM-A	10	3.8	Sticky point	3.4	47.9	3.8	0.0

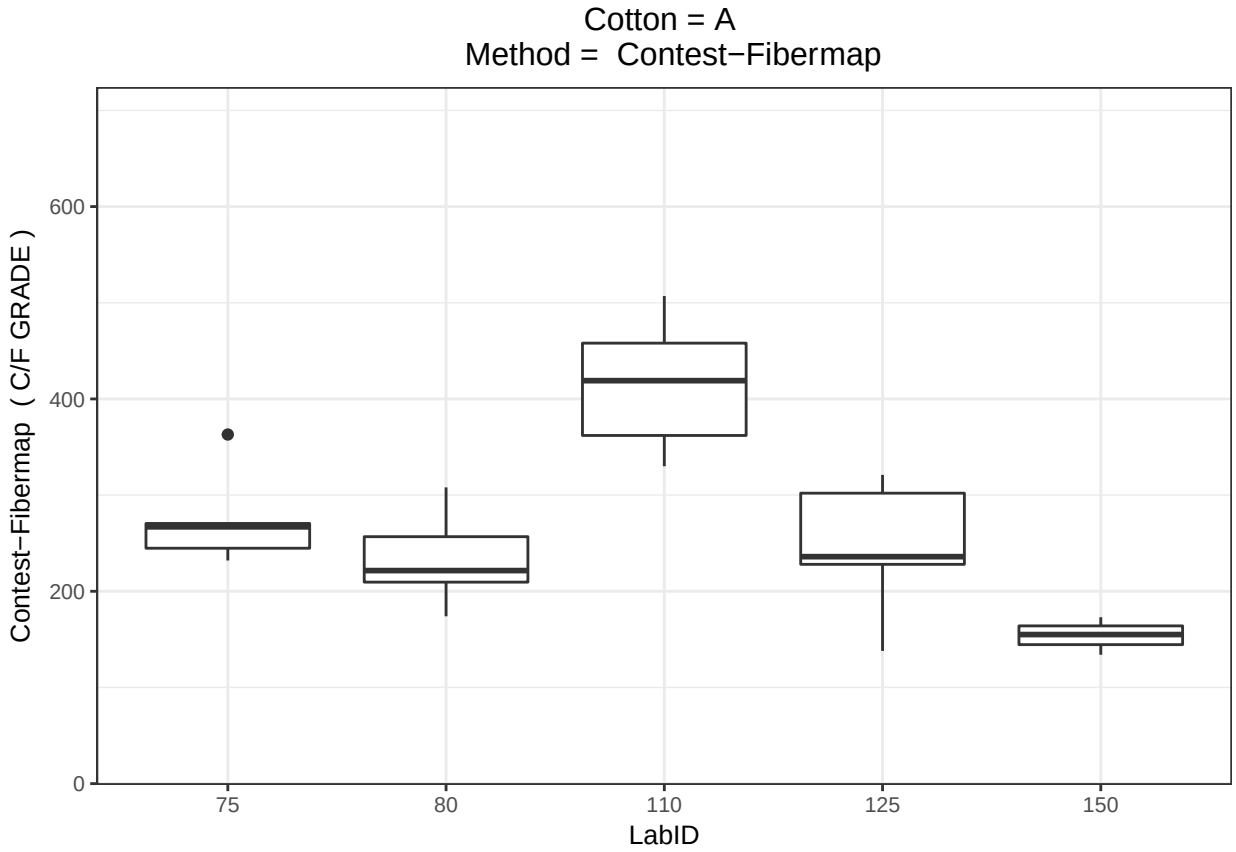
Data presented by boxplots per Method, LabID for cottons A, B and C [3]

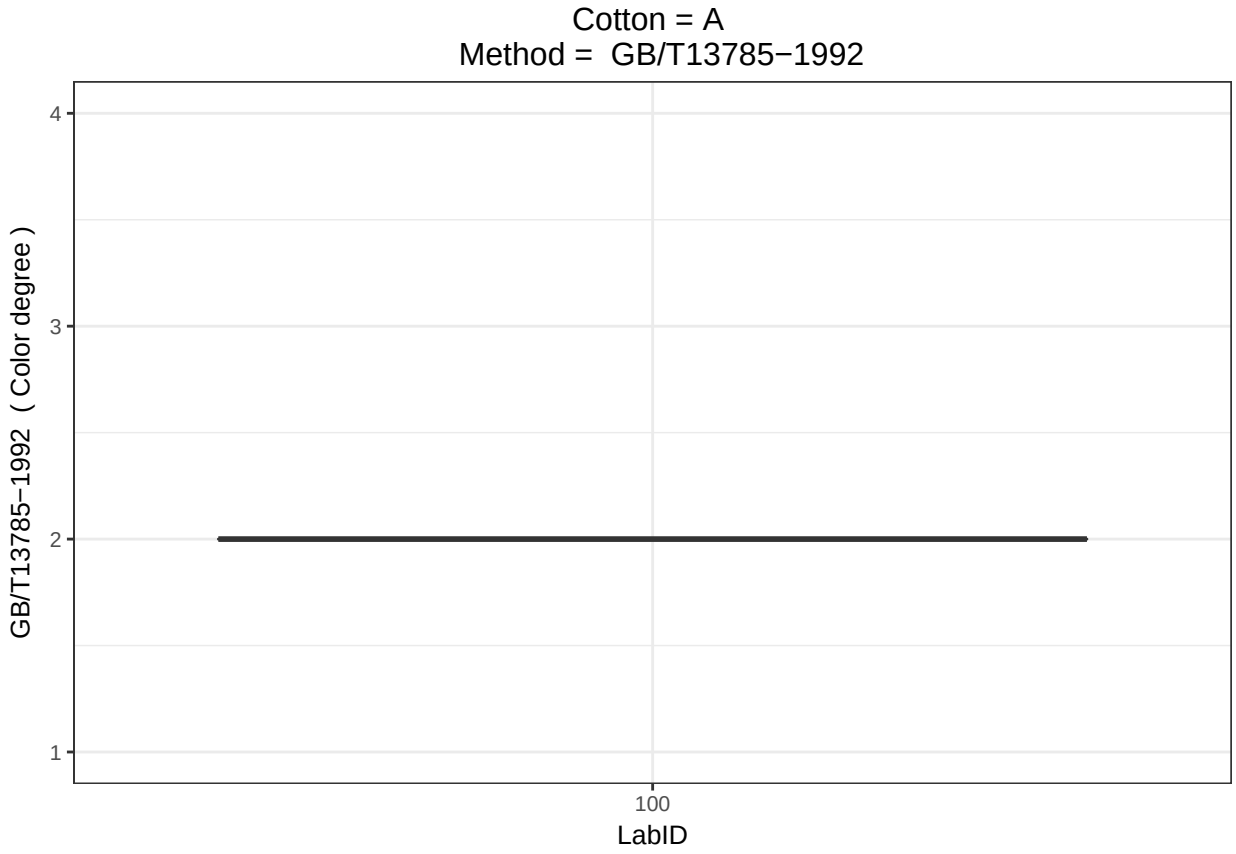
Boxplots for Cotton A

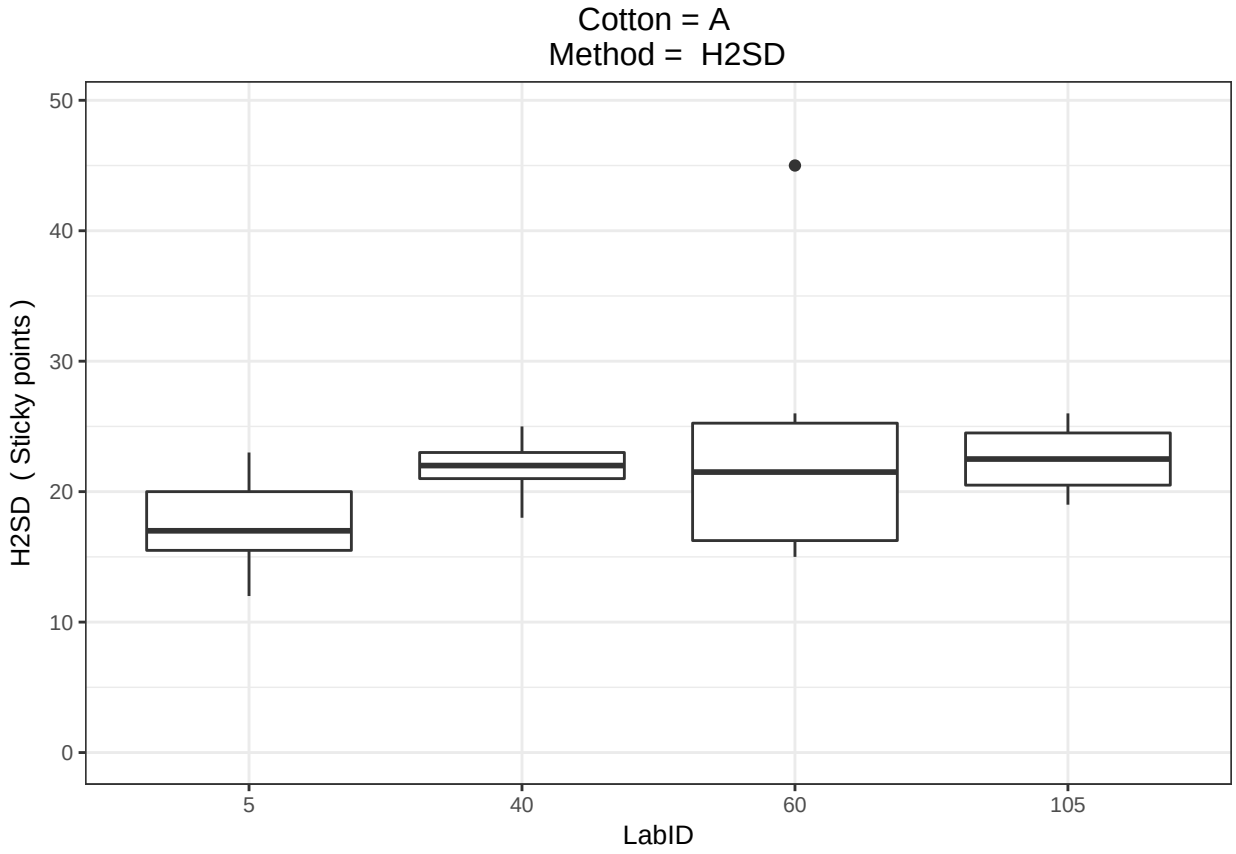


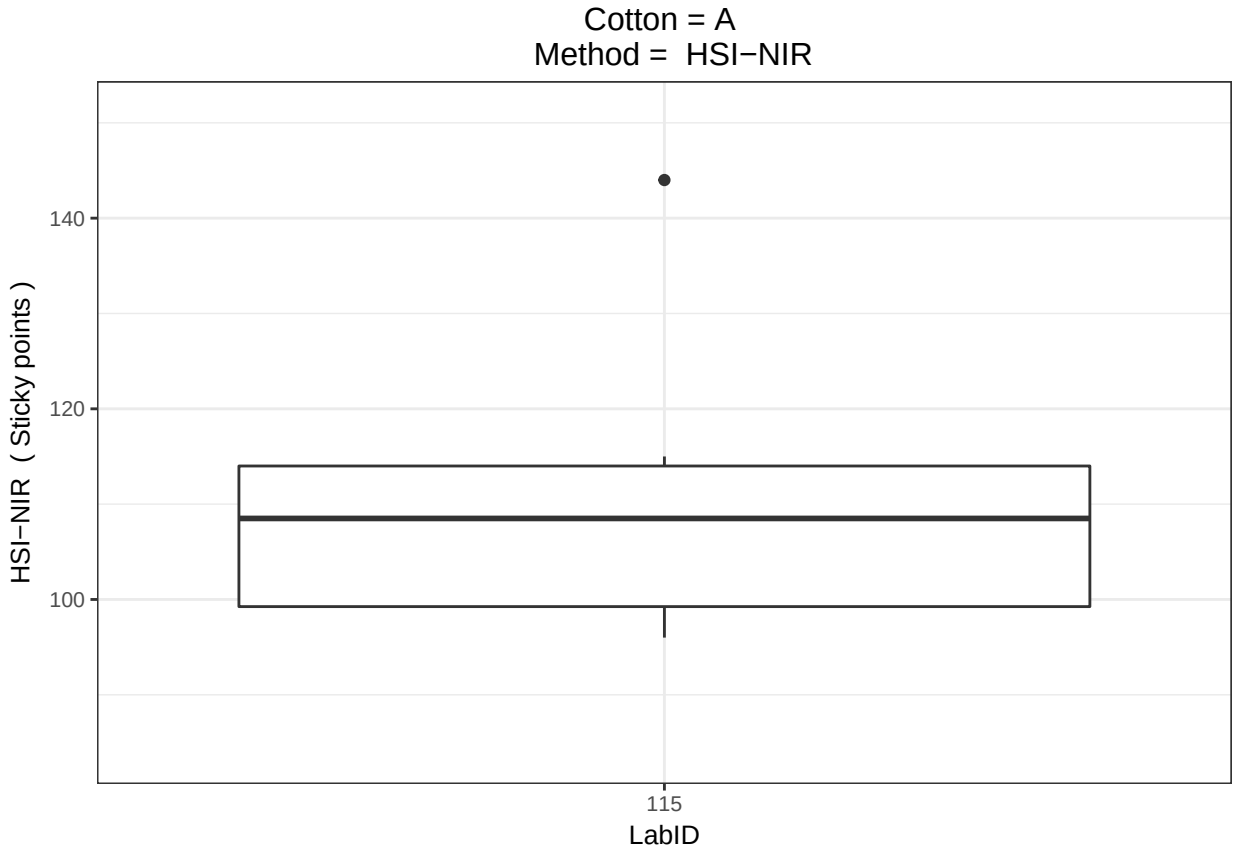
[3]Footnote
* NA excluded.
* In each box, the bolded line represents the median of all individual results for the considered LabID.
* The square represents the upper 75% (Q75) and lower 25% (Q25) percentiles of the individual results.
* The whiskers represent the quantiles that included in +/- 1.5 * (Q75-Q25).
* Extreme points may additionally be displayed by a point further out from the whiskers.

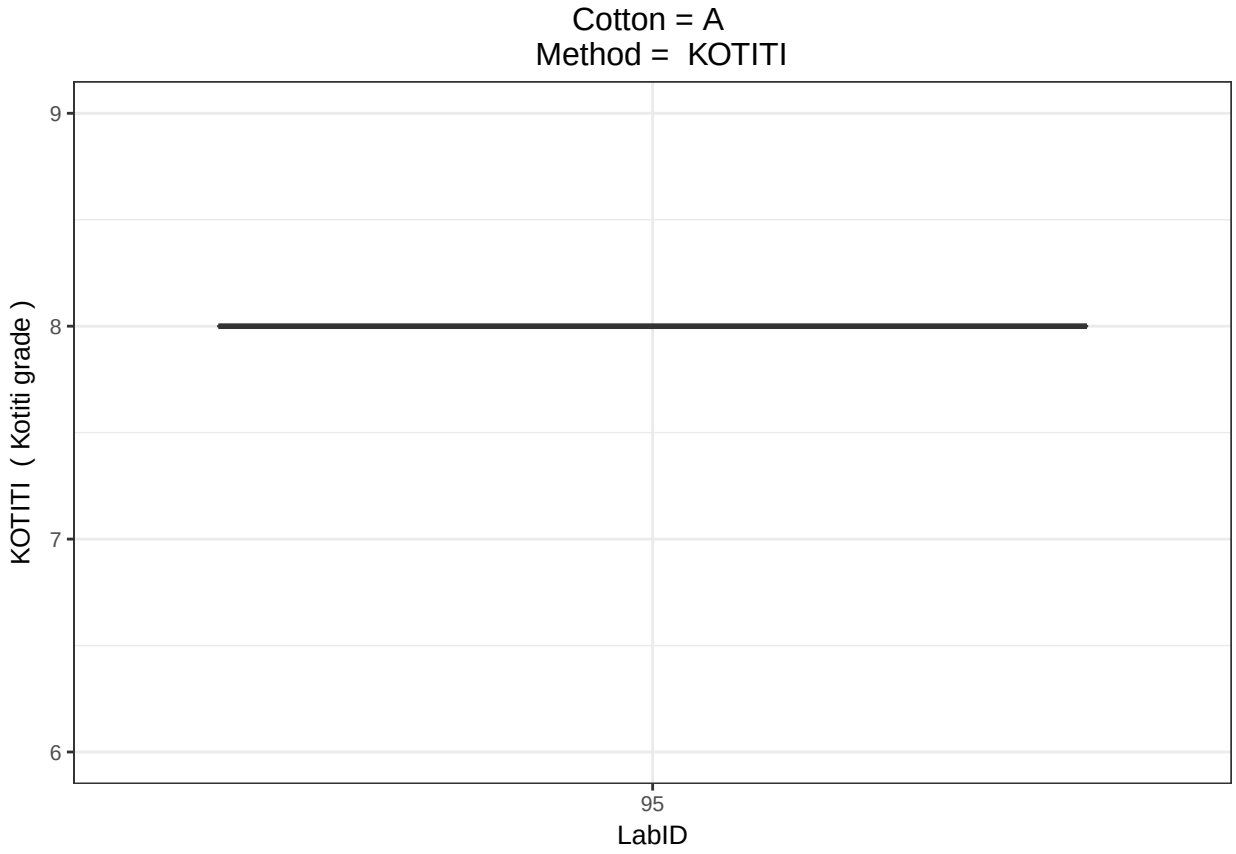

Cotton = A
Method = Clinitest
Clinitest (Color Chart)
4
3
2
1
0
15
LabID

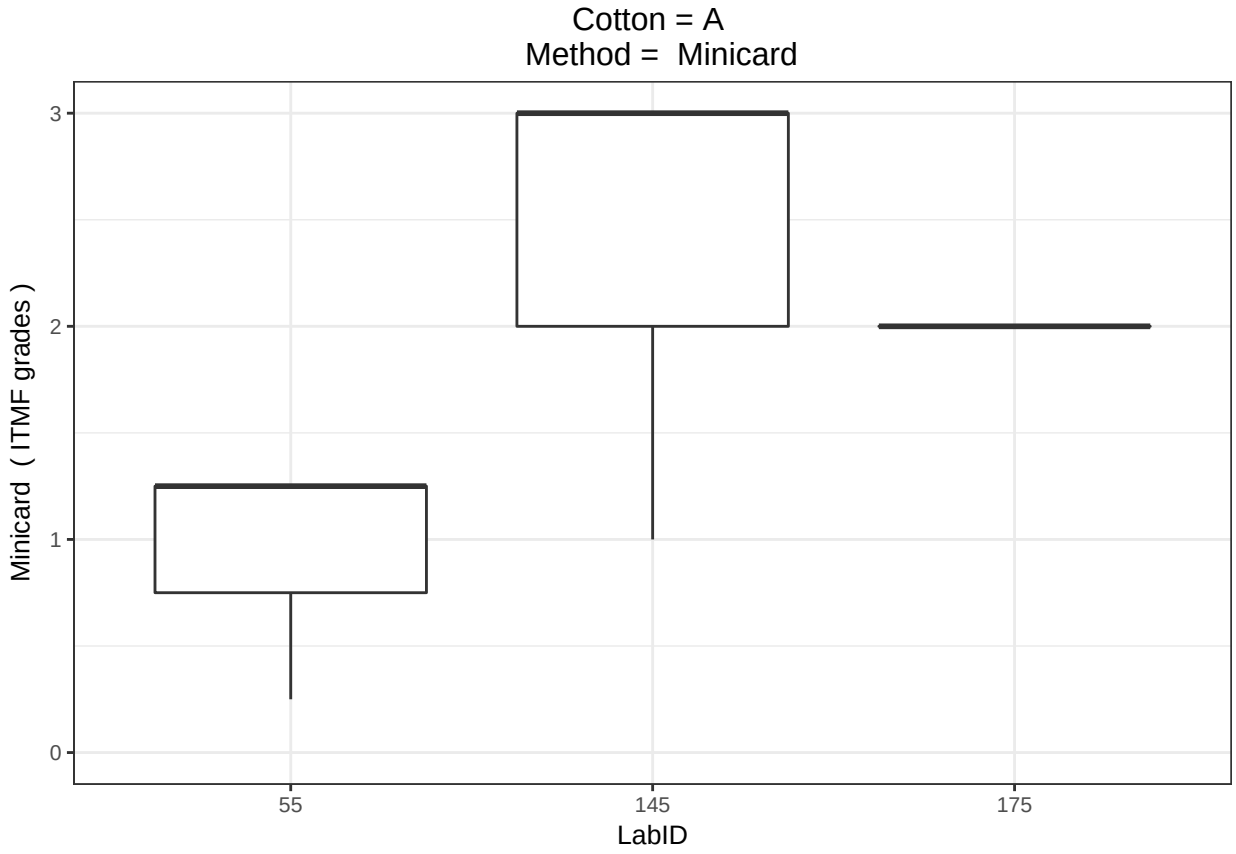

Cotton = A
Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
0
75
80
110
125
150
LabID

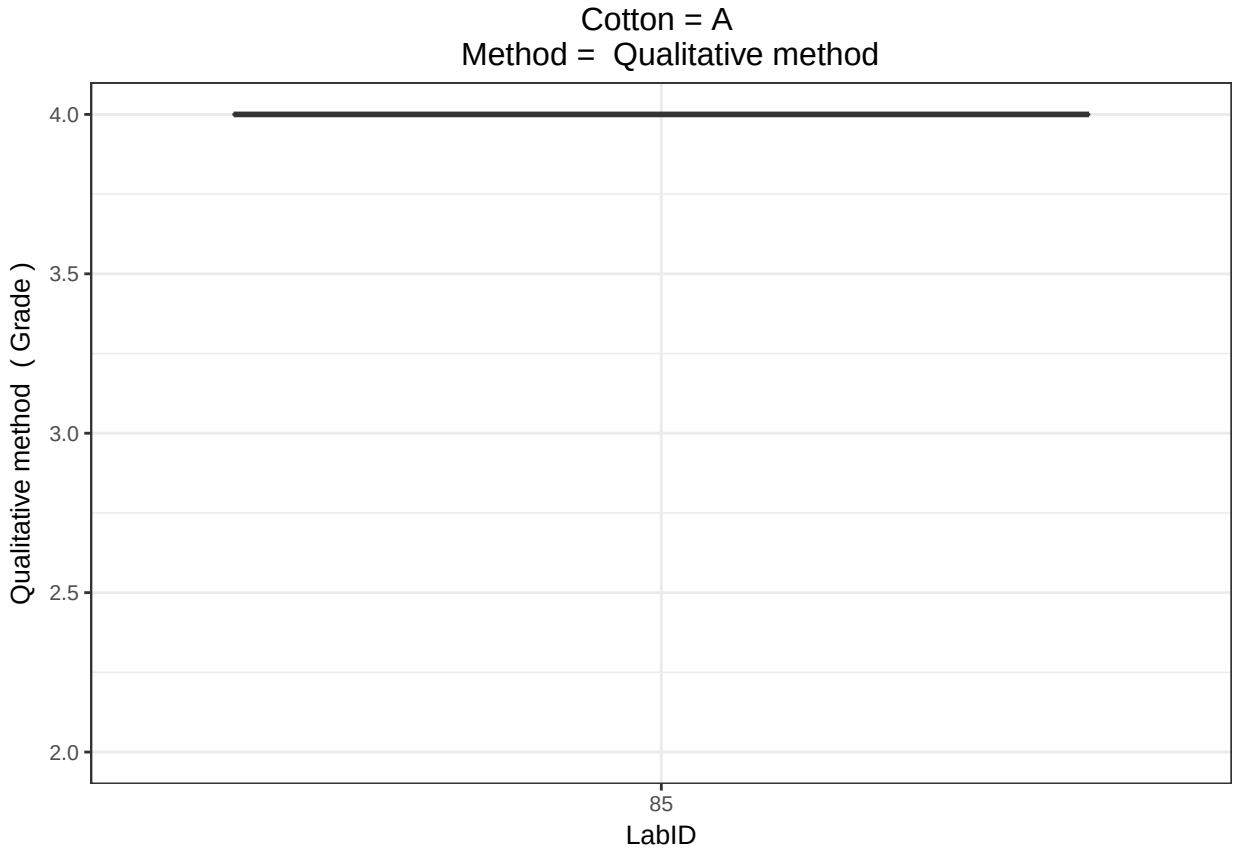

Cotton = A
Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
4
3
2
1
100
LabID

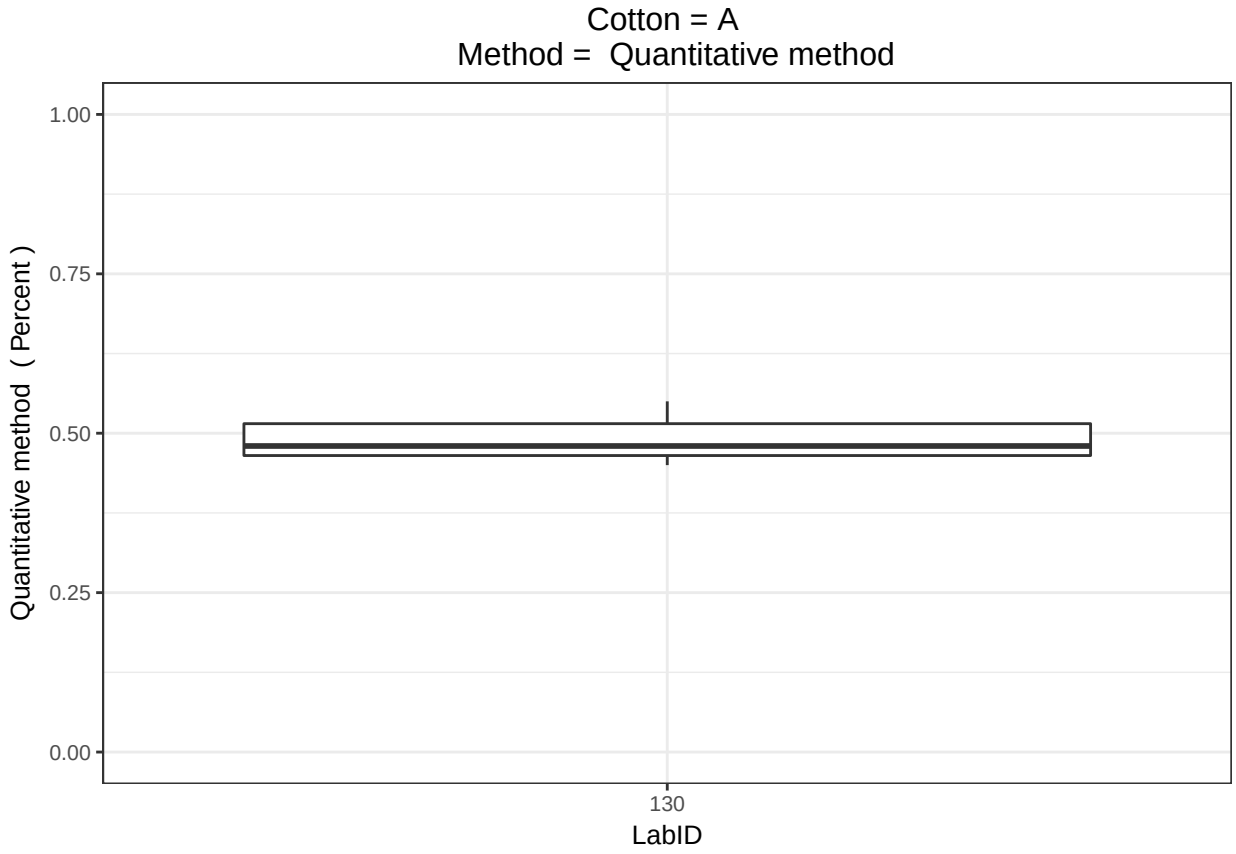

Cotton = A
Method = H2SD
H2SD (Sticky points)
50
40
30
20
10
0
5
40
60
105
LabID

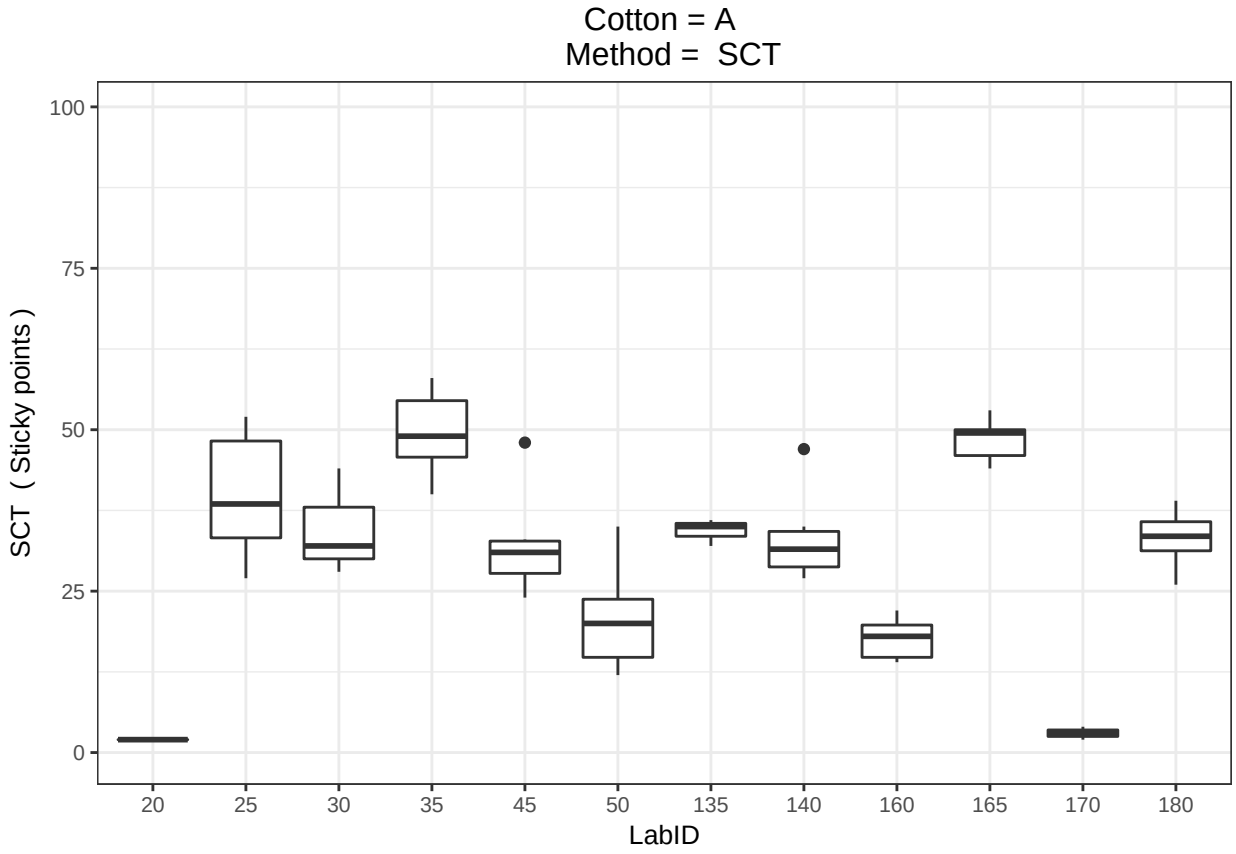

Cotton = A
Method = HSI−NIR
HSI−NIR (Sticky points)
140
120
100
115
LabID

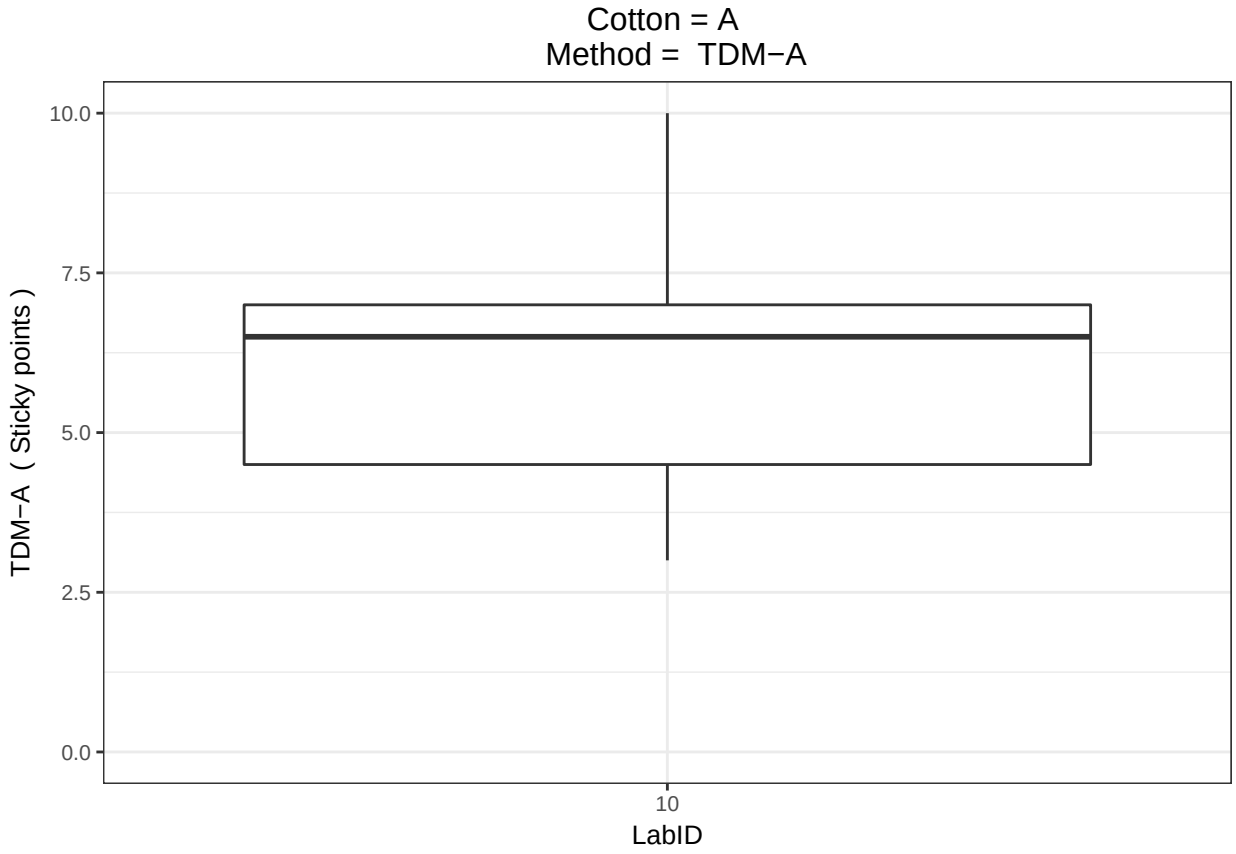

Cotton = A
Method = KOTITI
KOTITI (Kotiti grade)
9
8
7
6
95
LabID


Cotton = A
Method = Minicard
Minicard (ITMF grades)
3
2
1
0
55
145
175
LabID

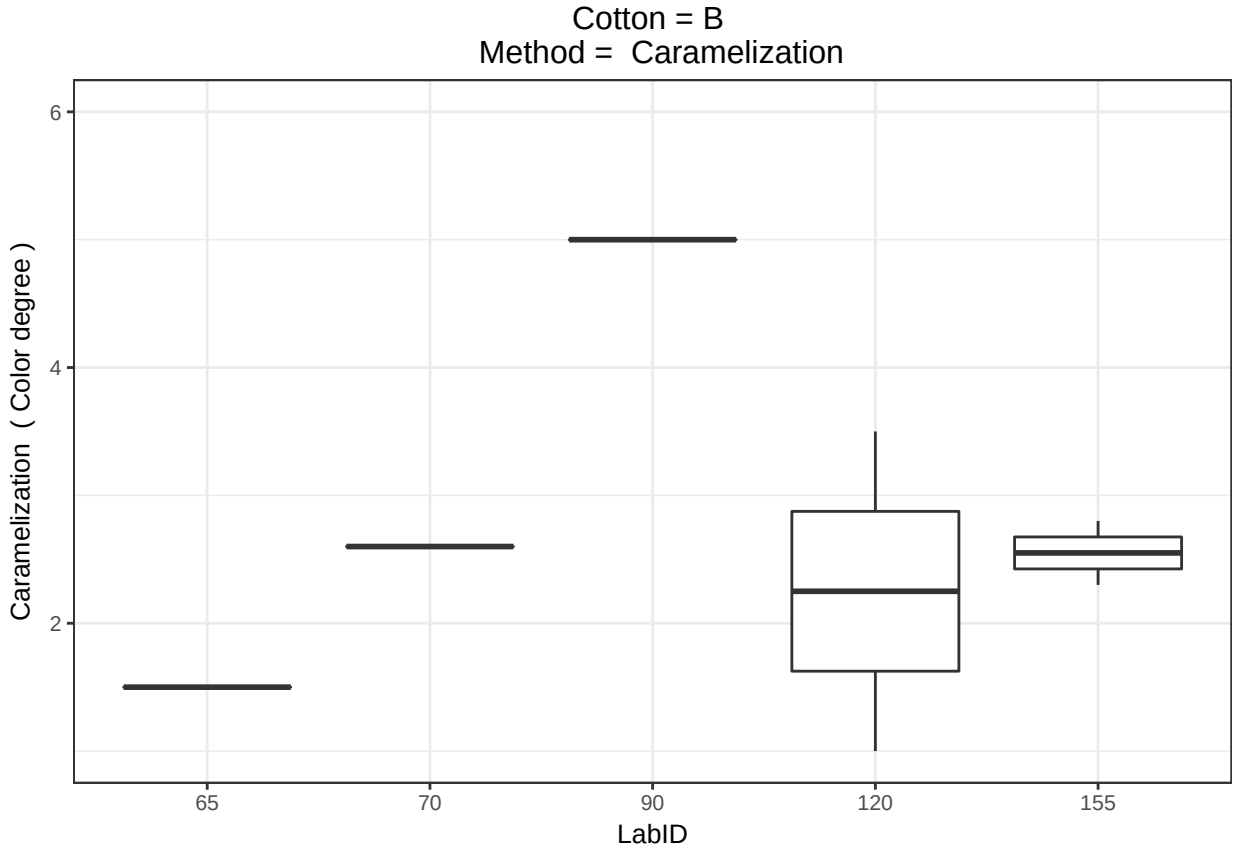

Cotton = A
Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
85
LabID

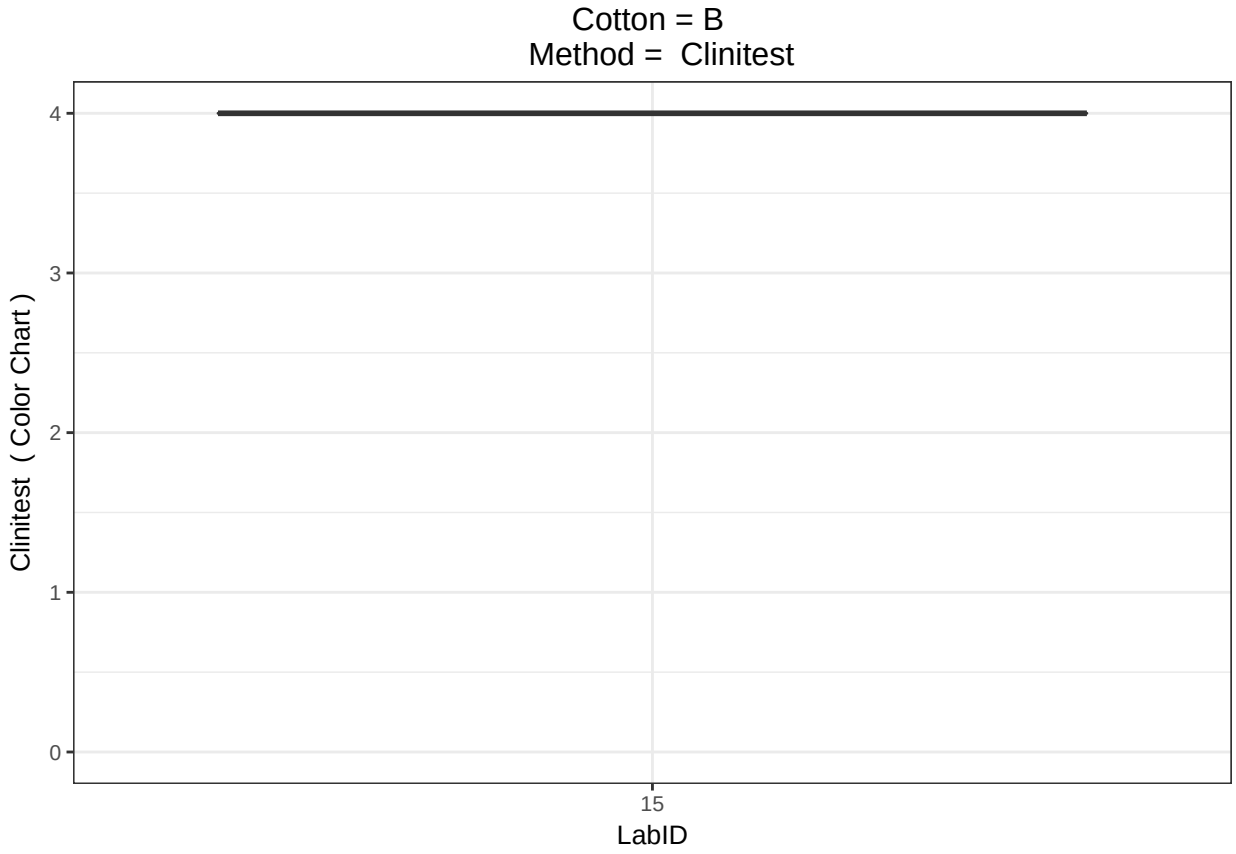

Cotton = A
Method = Quantitative method
1.00
0.75
0.50
0.25
0.00
Quantitative method (Percent)
130
LabID

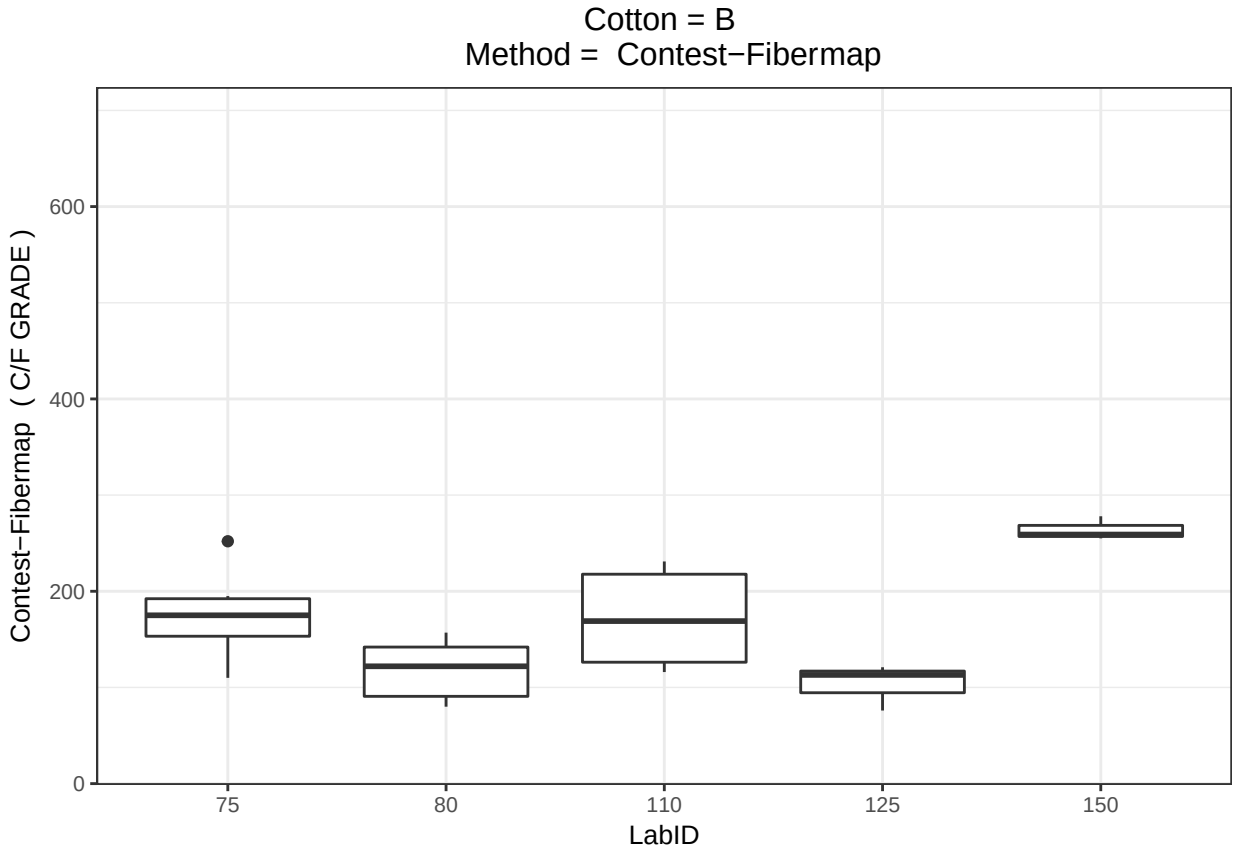

Cotton = A
Method = SCT
SCT (Sticky points)
100
75
50
25
0
20
25
30
35
45
50
135
140
160
165
170
180
LabID

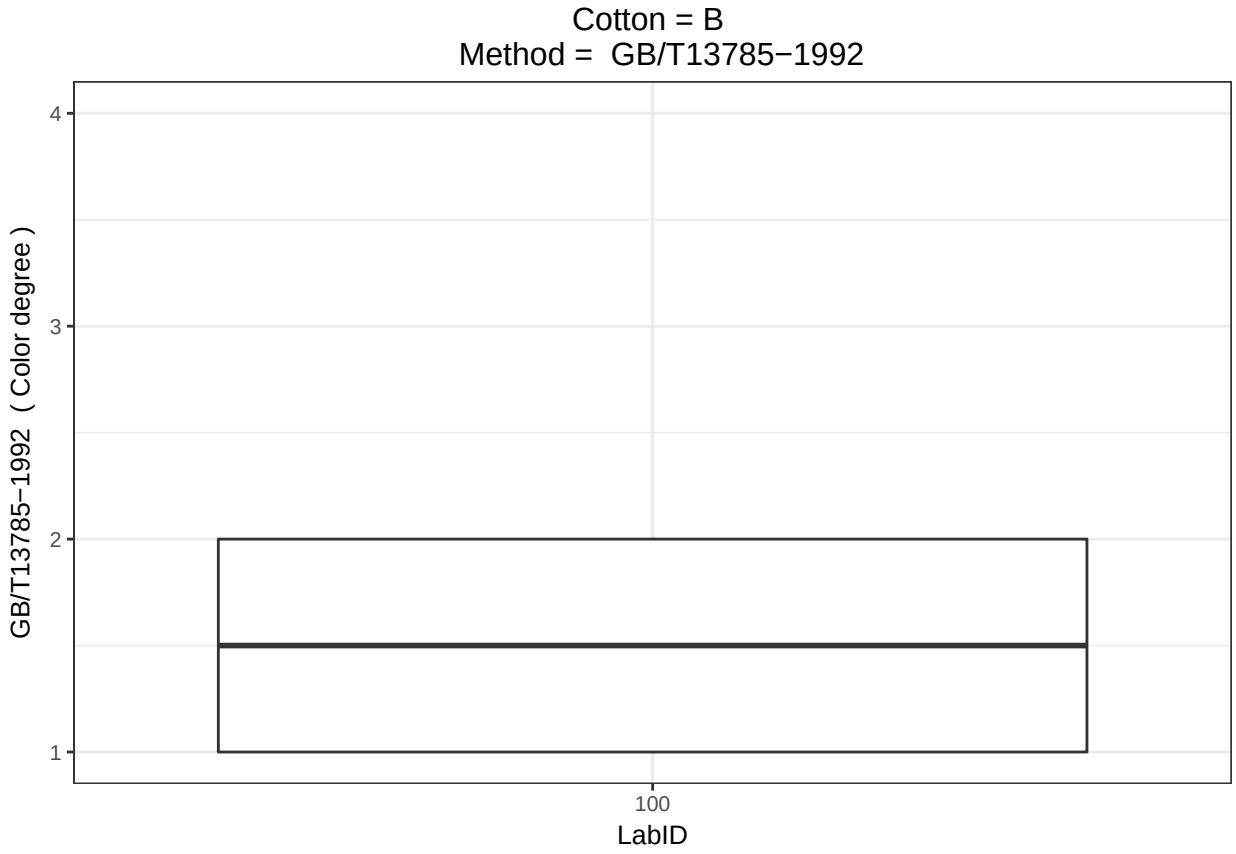

Cotton = A
Method = TDM−A
10.0
7.5
5.0
2.5
0.0
TDM−A (Sticky points)
10
LabID

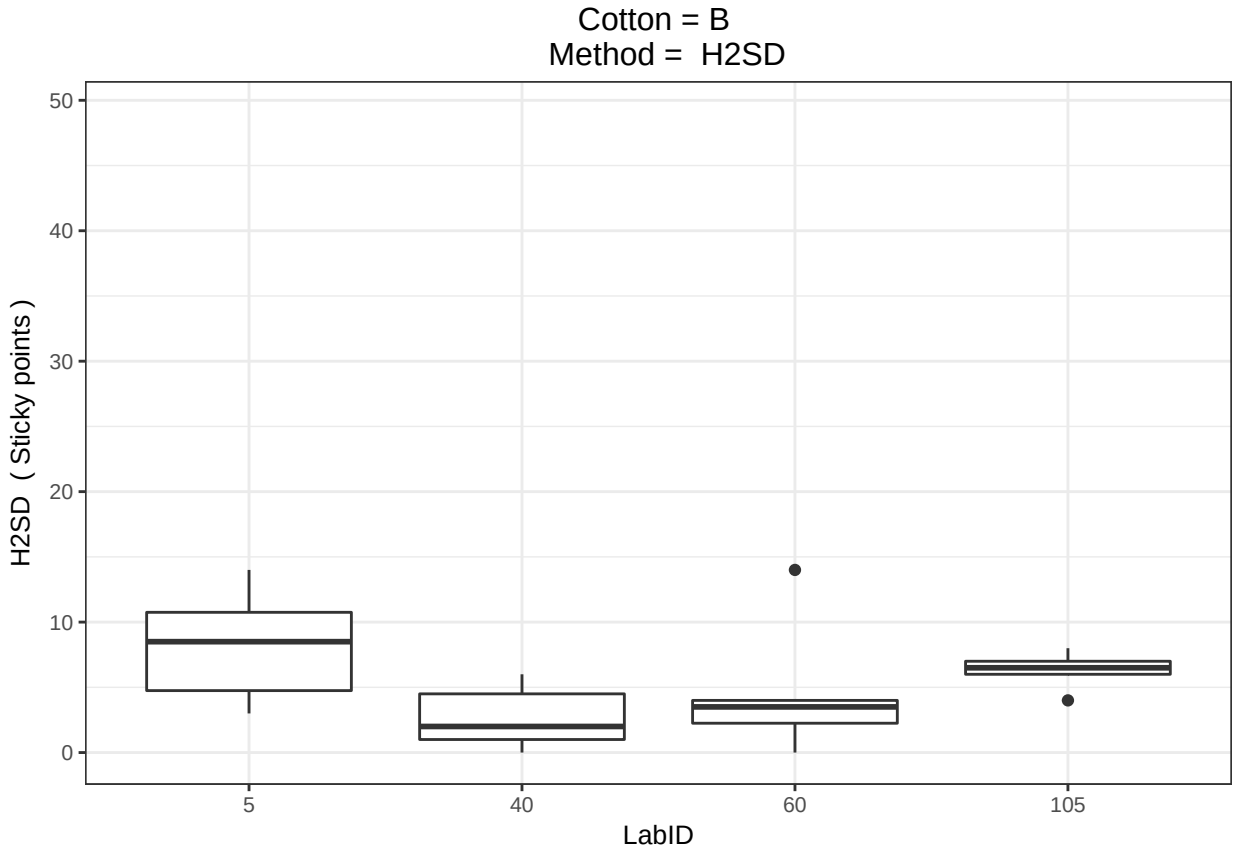
Boxplots for Cotton B

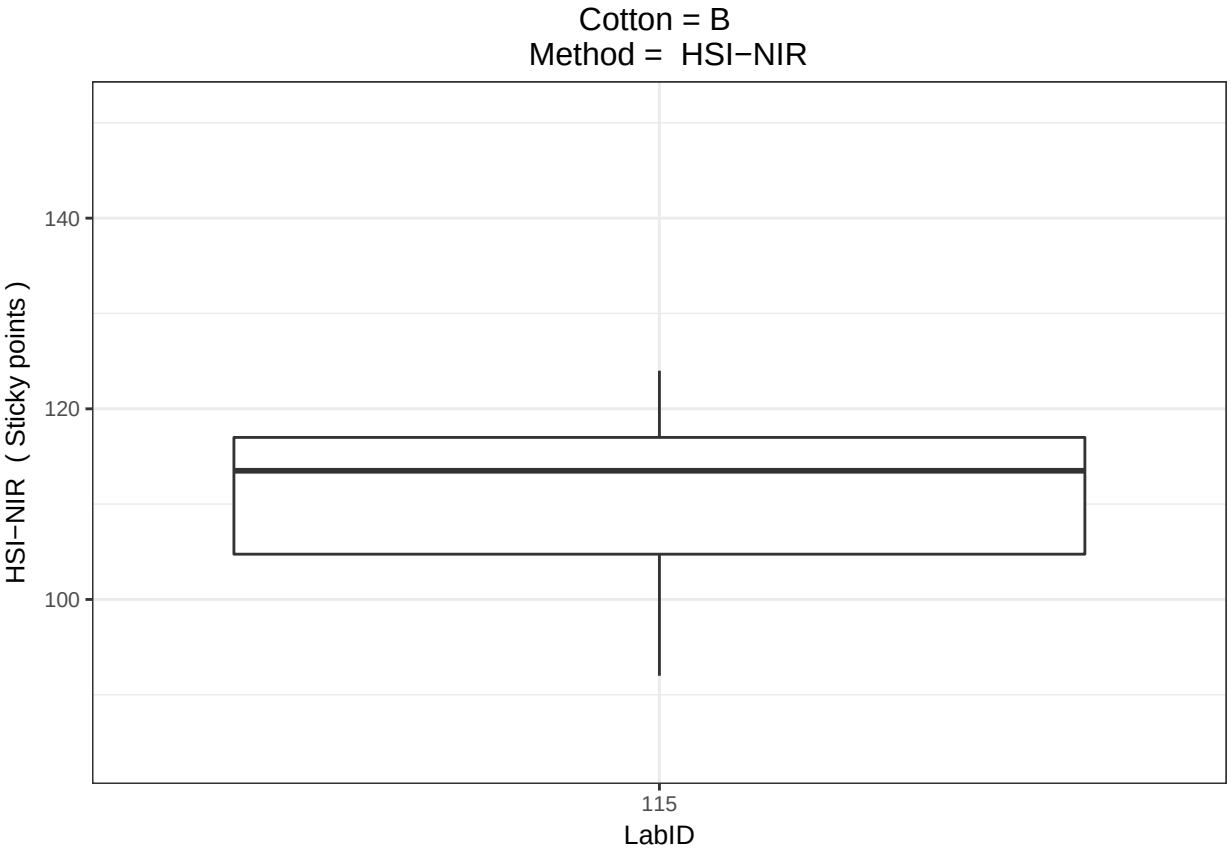


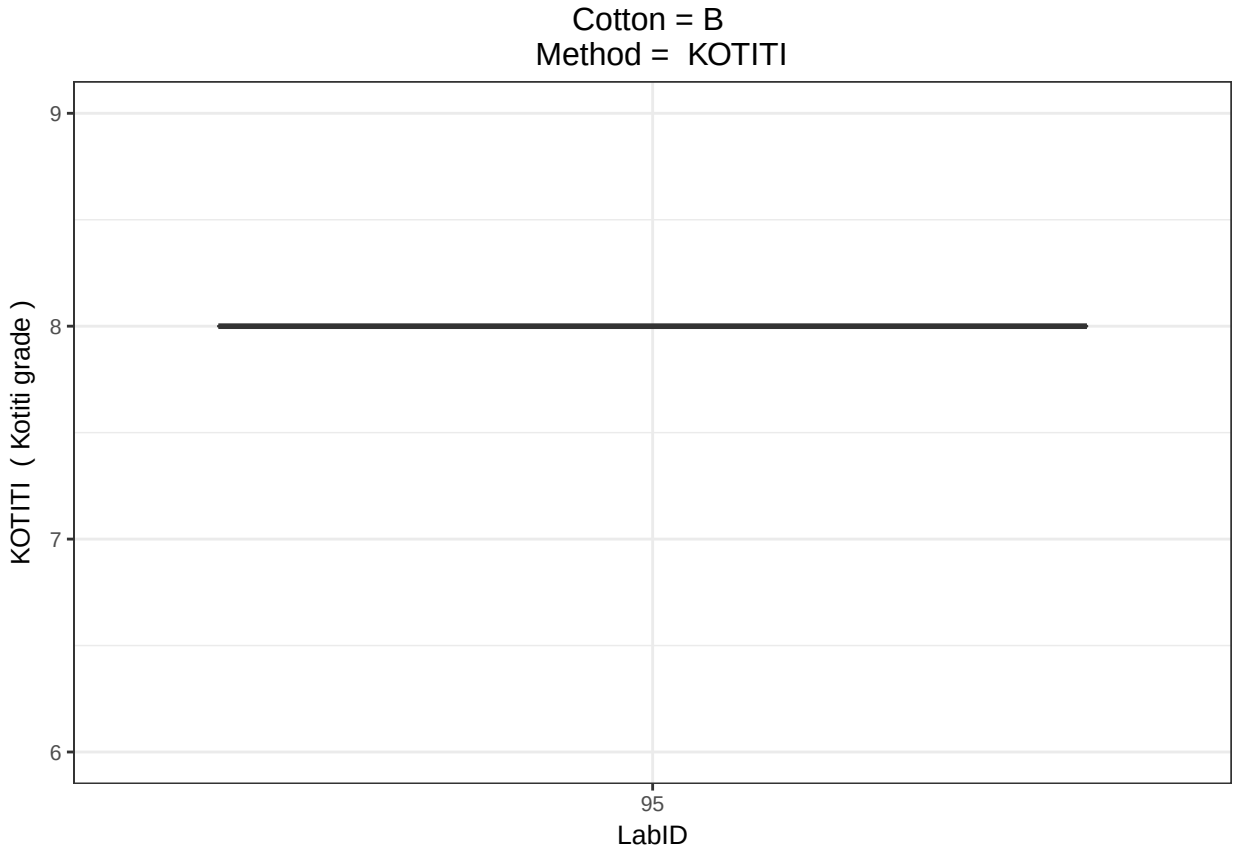

Cotton = B
Method = Clinitest
Clinitest (Color Chart)
4
3
2
1
0
15
LabID

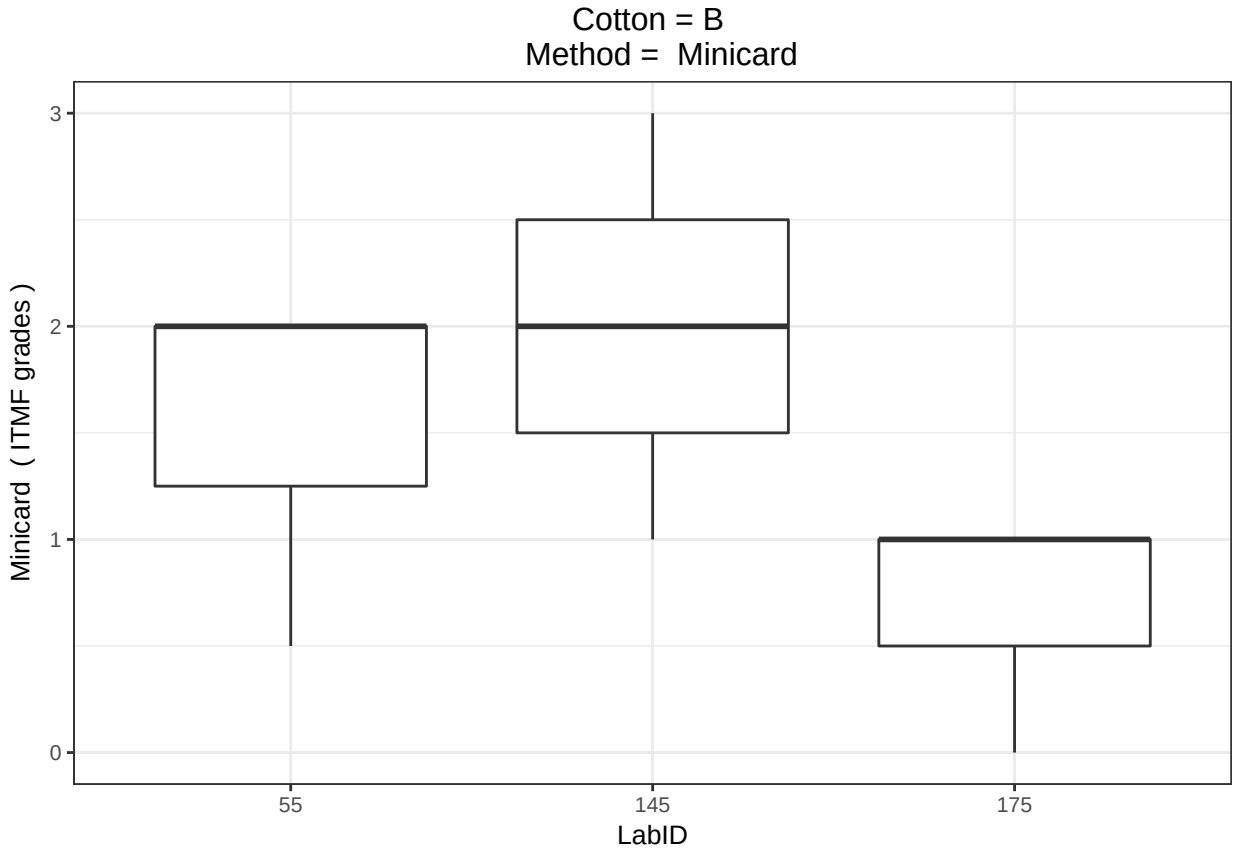

Cotton = B
Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
0
75
80
110
125
150
LabID

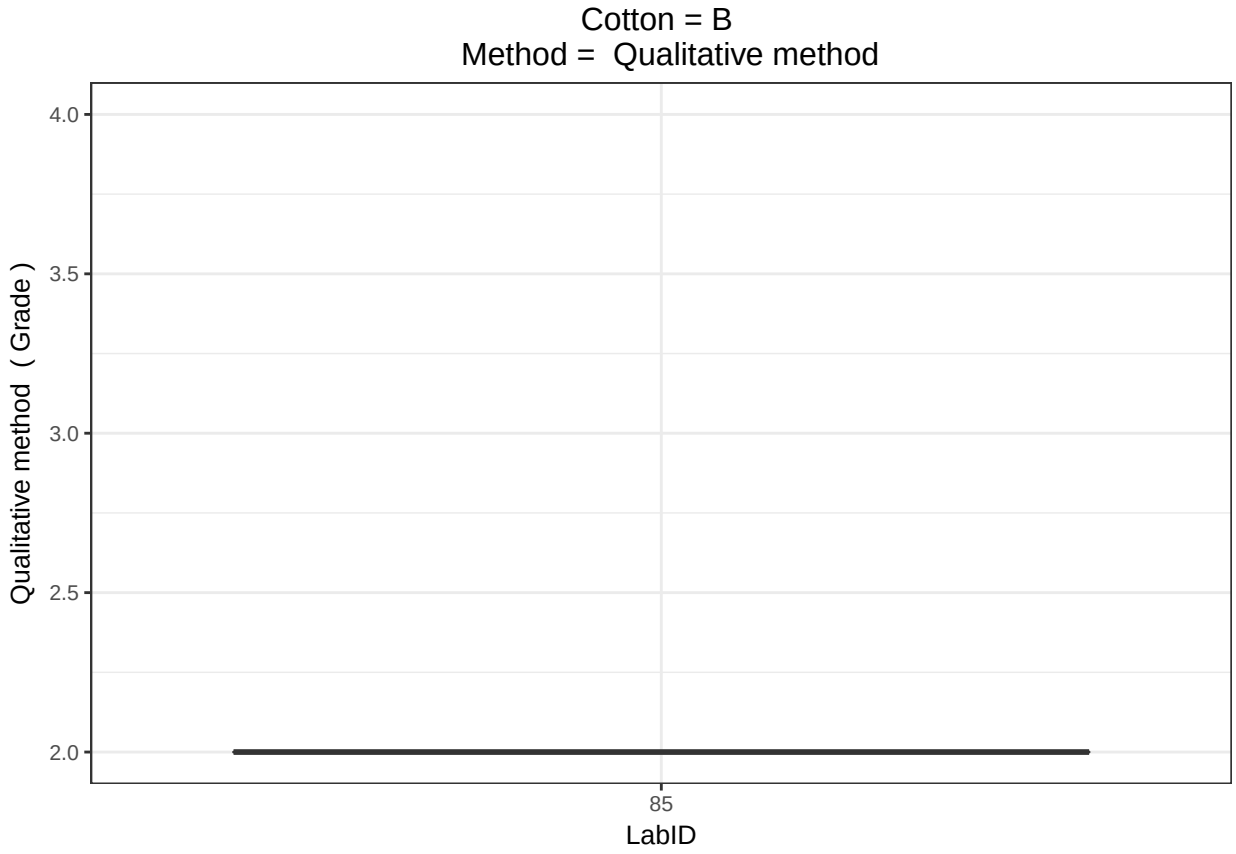

Cotton = B
Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
4
3
2
1
100
LabID

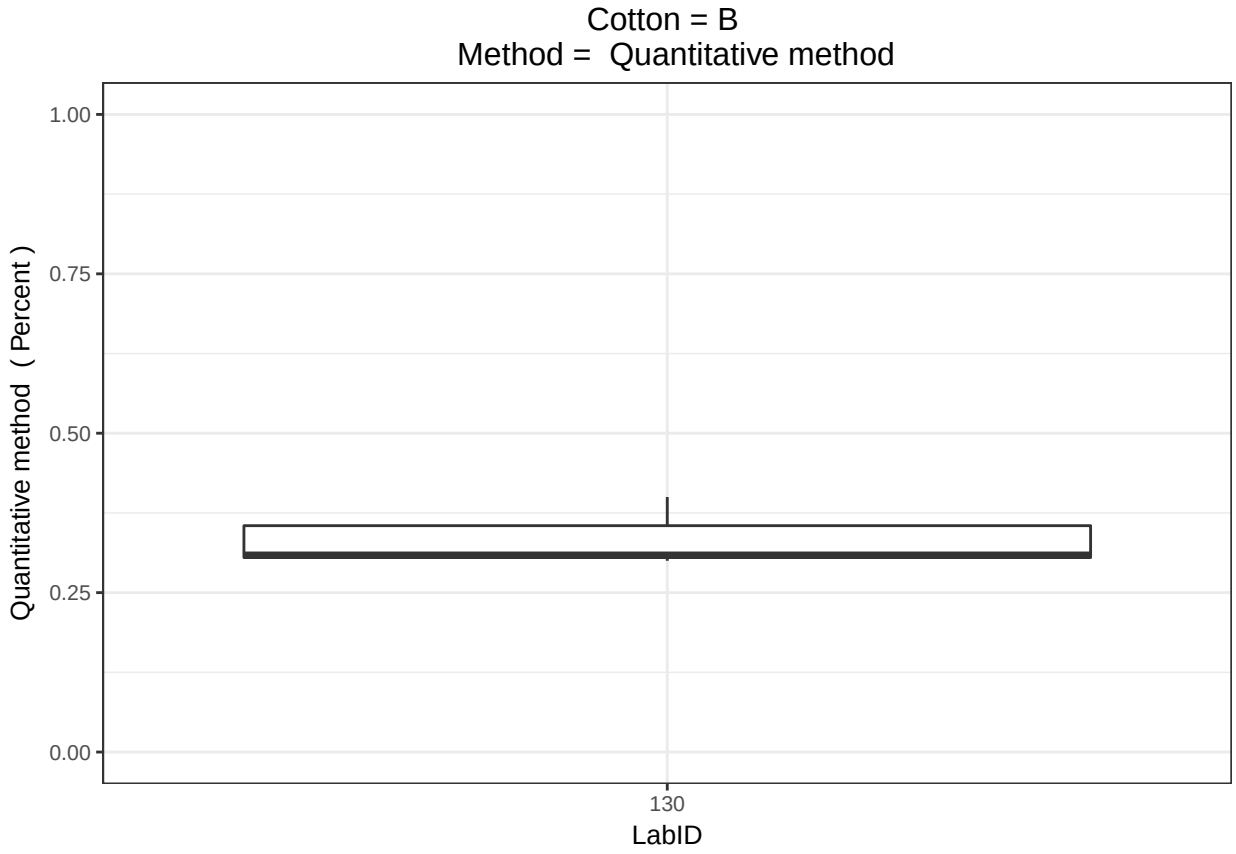

Cotton = B
Method = H2SD
H2SD (Sticky points)
50
40
30
20
10
0
5
40
60
105
LabID

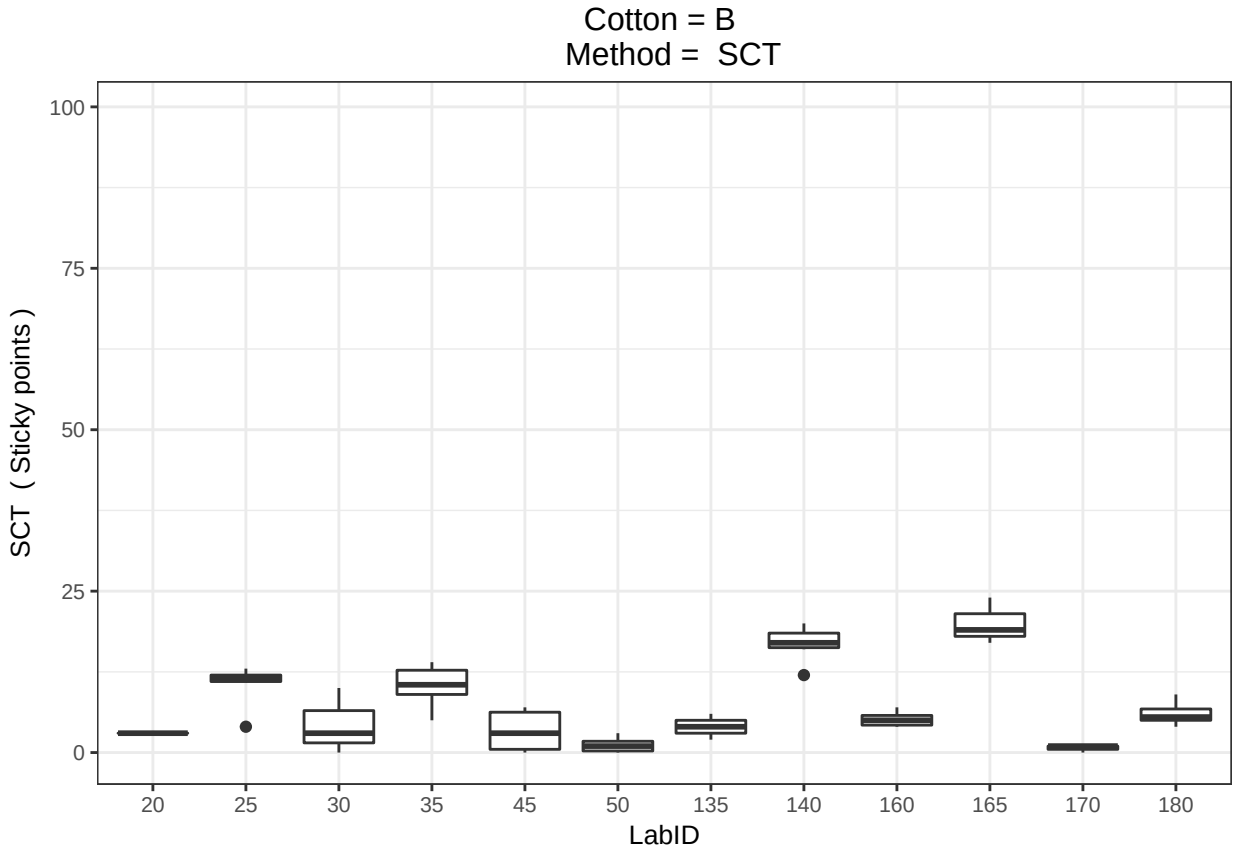

Cotton = B
Method = HSI−NIR
HSI−NIR (Sticky points)
140
120
100
115
LabID

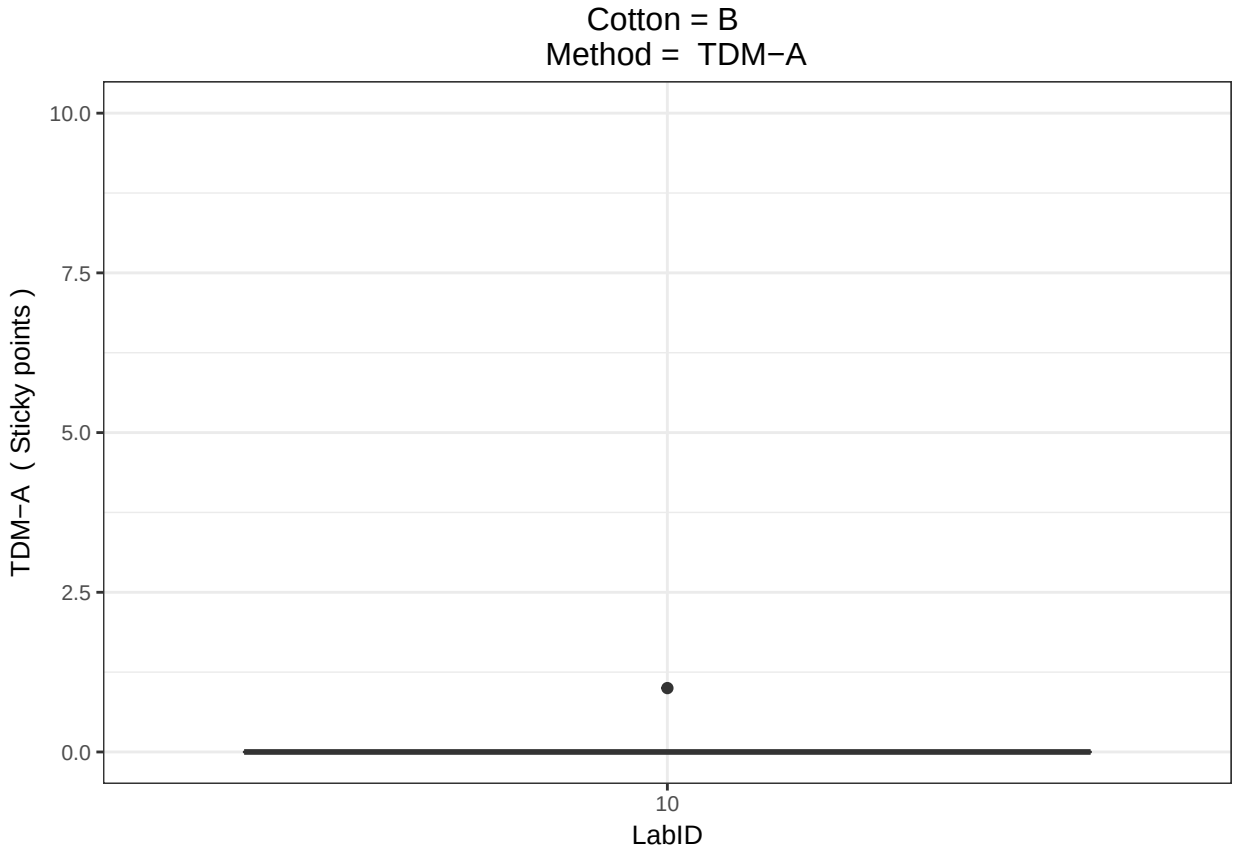

Cotton = B
Method = KOTITI
9
8
7
6
KOTITI (Kotiti grade)
95
LabID


Cotton = B
Method = Minicard
Minicard (ITMF grades)
3
2
1
0
55
145
175
LabID

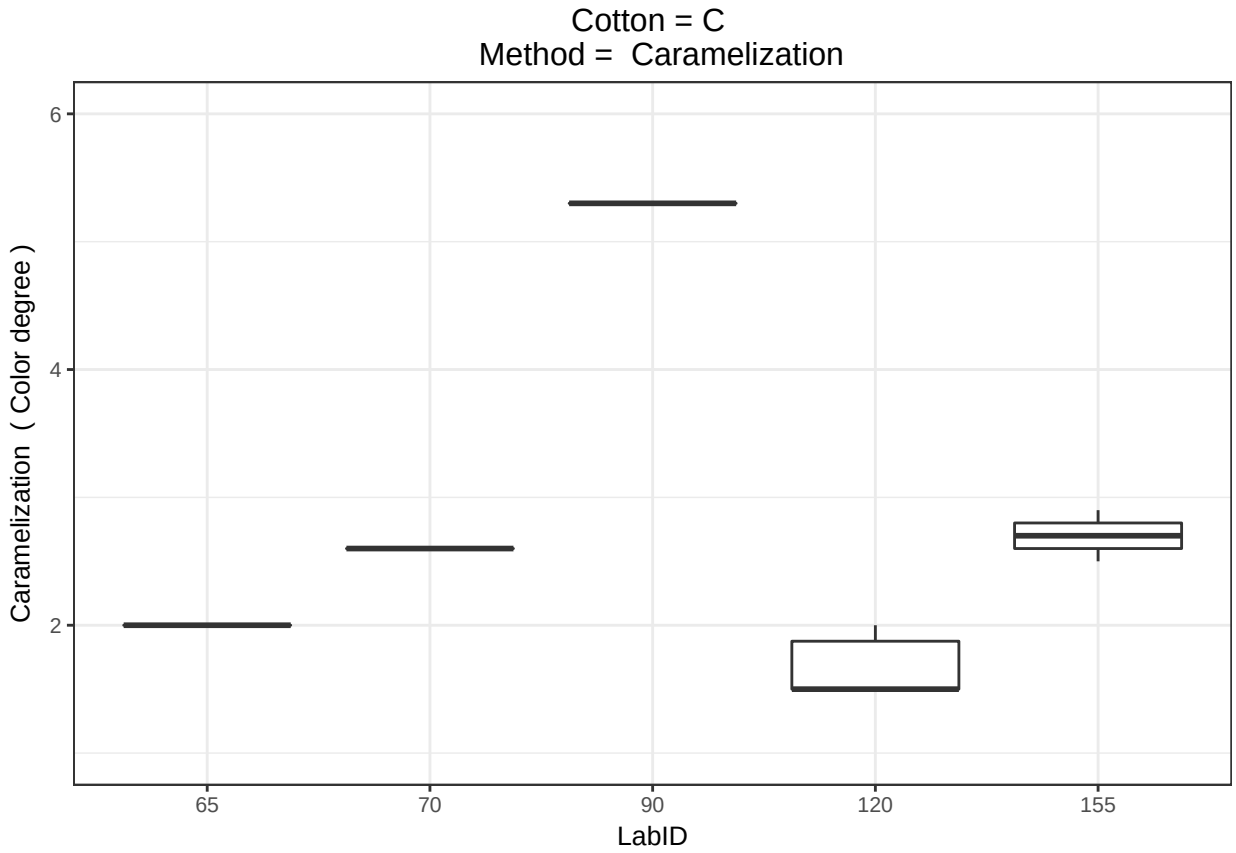

Cotton = B
Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
85
LabID

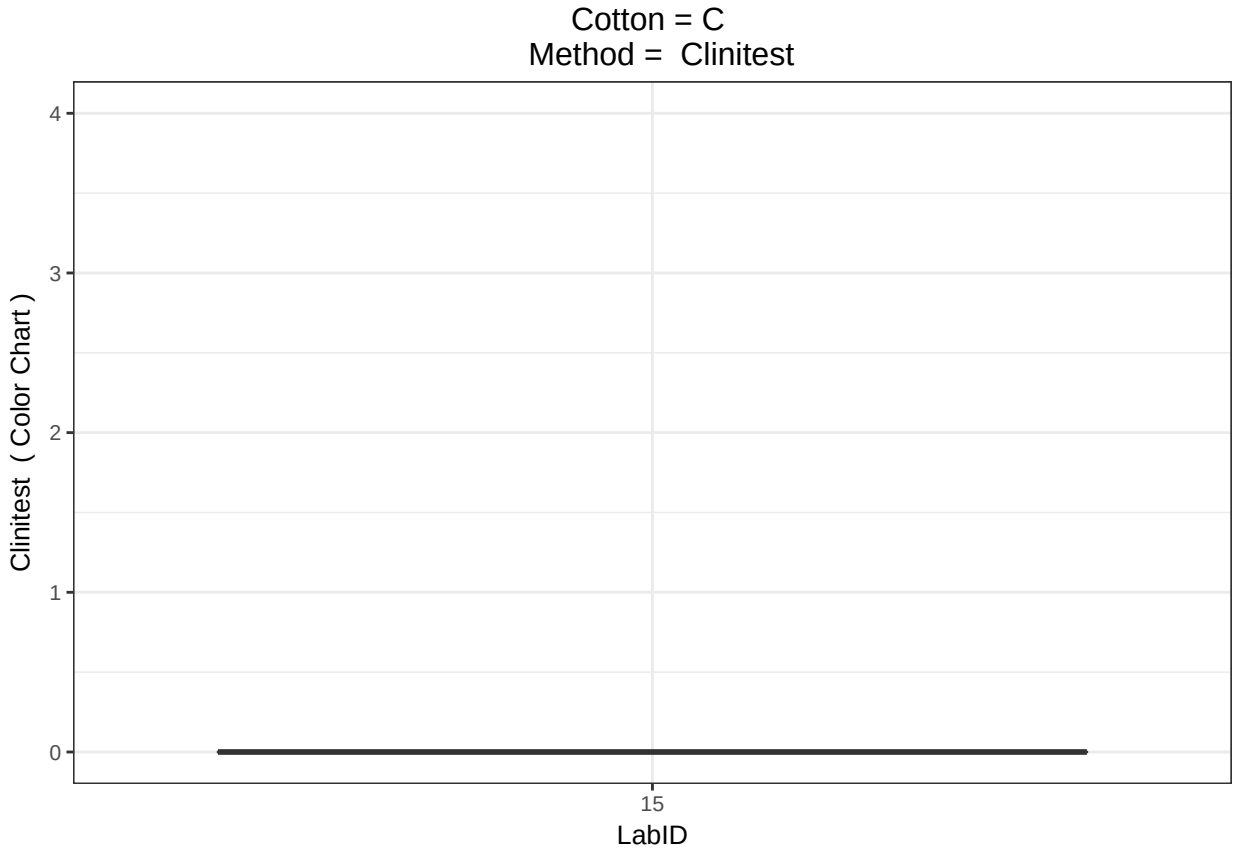

Cotton = B
Method = Quantitative method
Quantitative method (Percent)
1.00
0.75
0.50
0.25
0.00
130
LabID

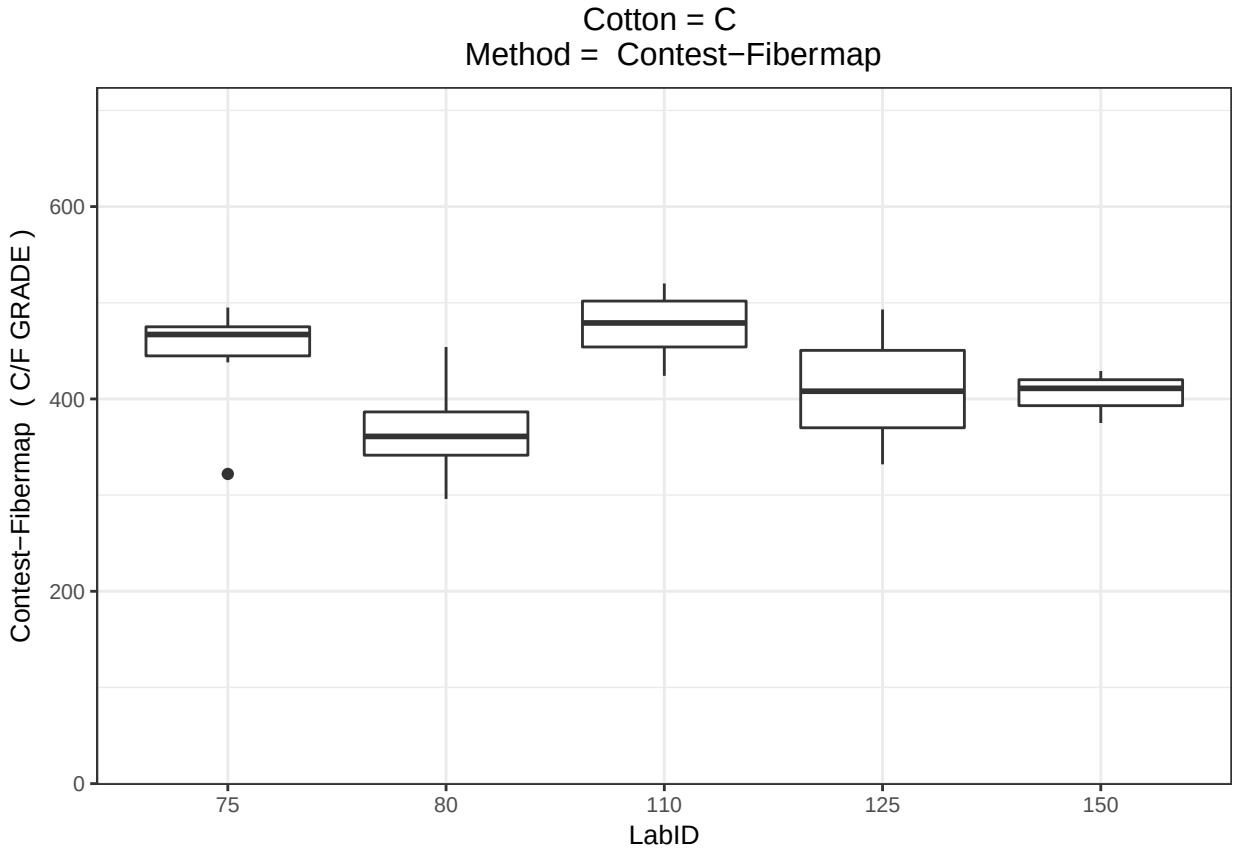

Cotton = B
Method = SCT
SCT (Sticky points)
100
75
50
25
0
20
25
30
35
45
50
135
140
160
165
170
180
LabID

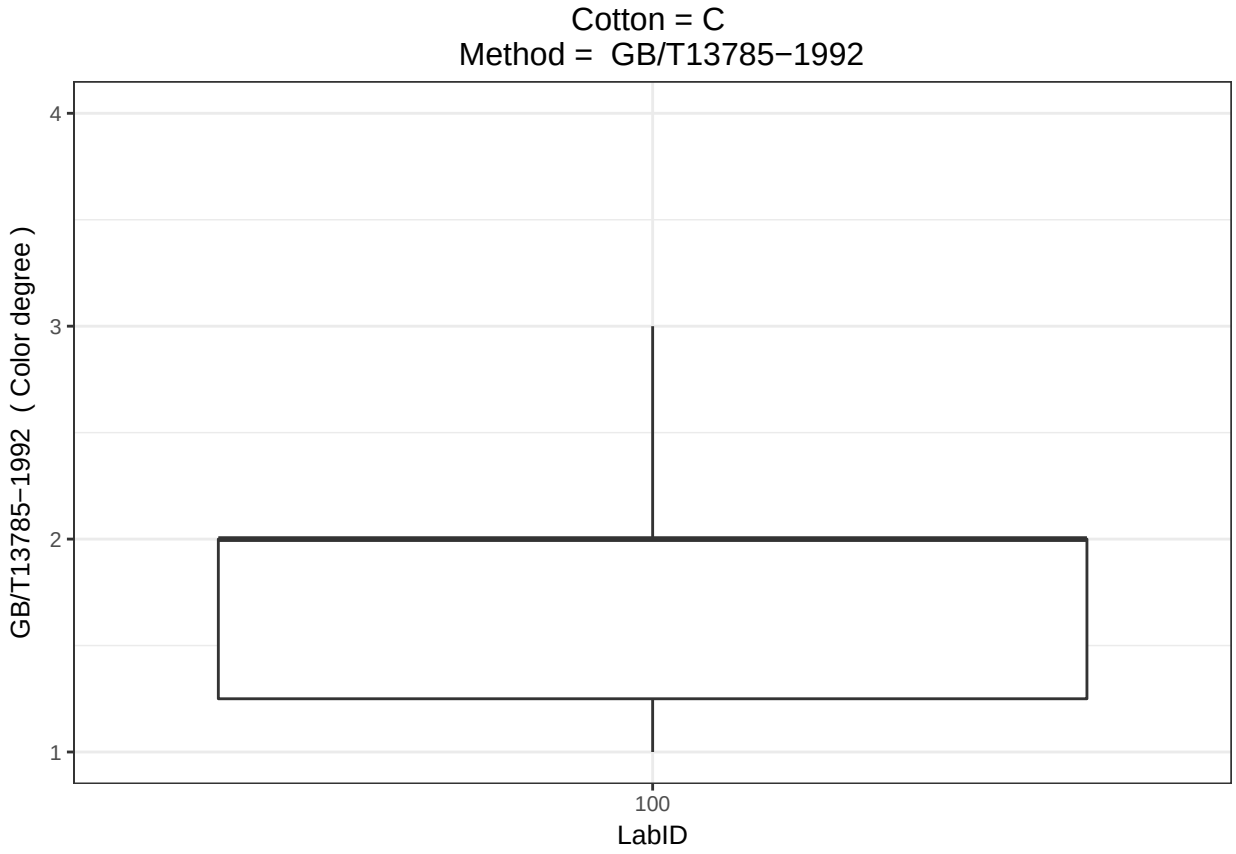

Cotton = B
Method = TDM−A
TDM−A (Sticky points)
10.0
7.5
5.0
2.5
0.0
10
LabID

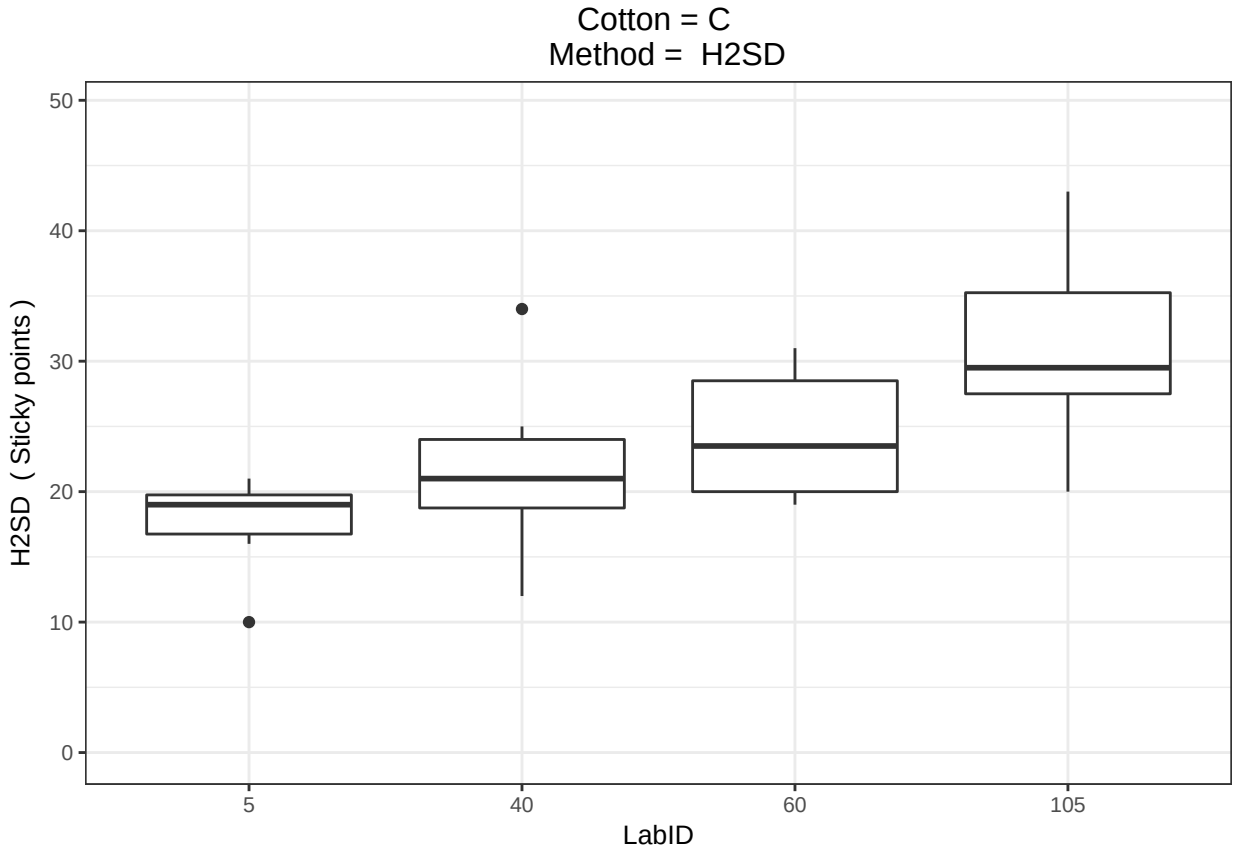
Boxplots for Cotton C

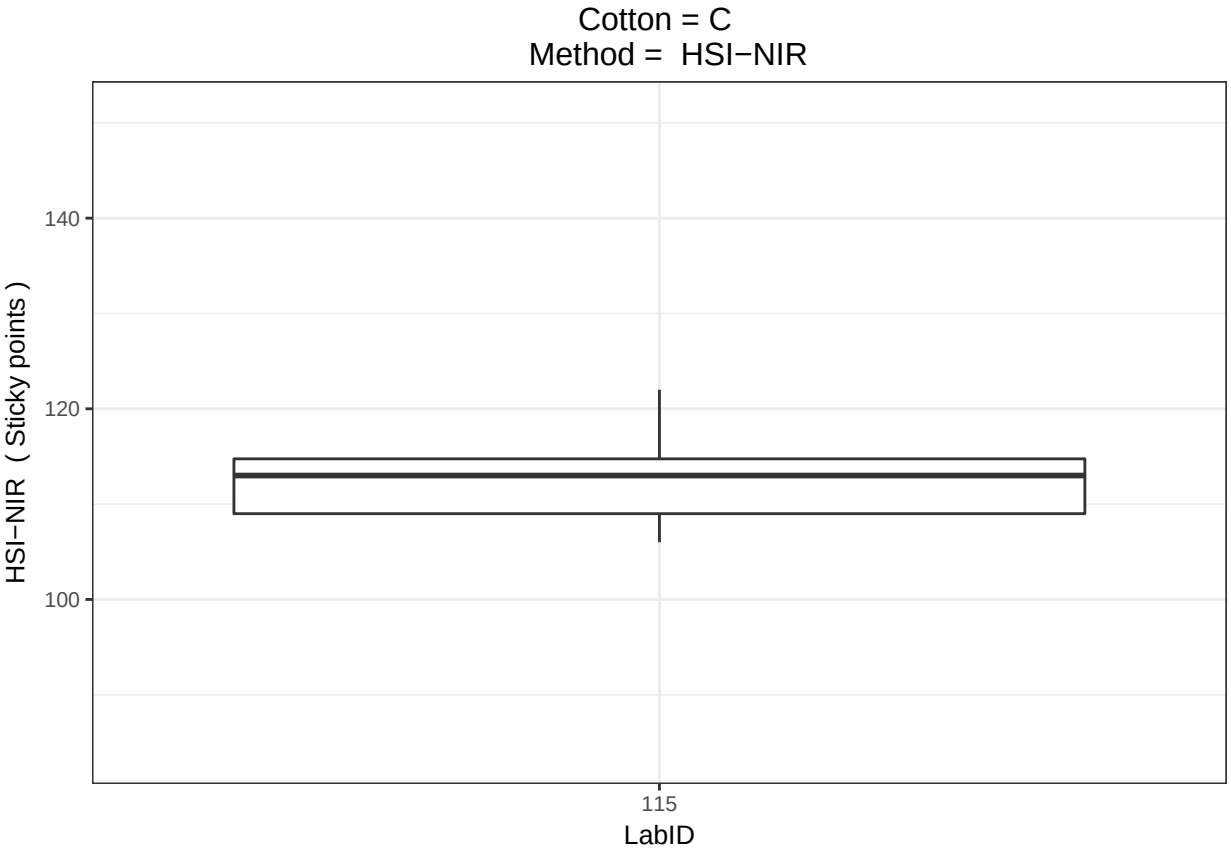


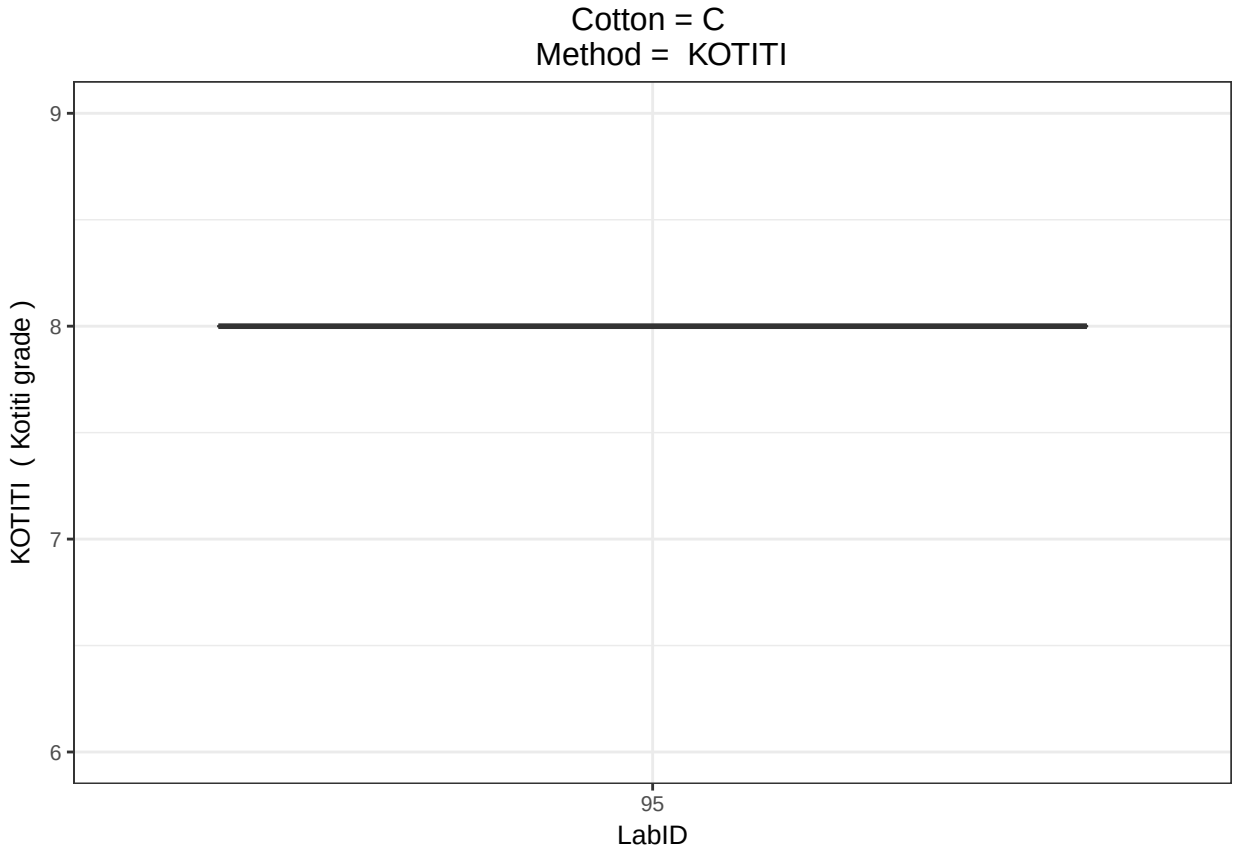

Cotton = C
Method = Clinitest
Clinitest (Color Chart)
4
3
2
1
0
15
LabID

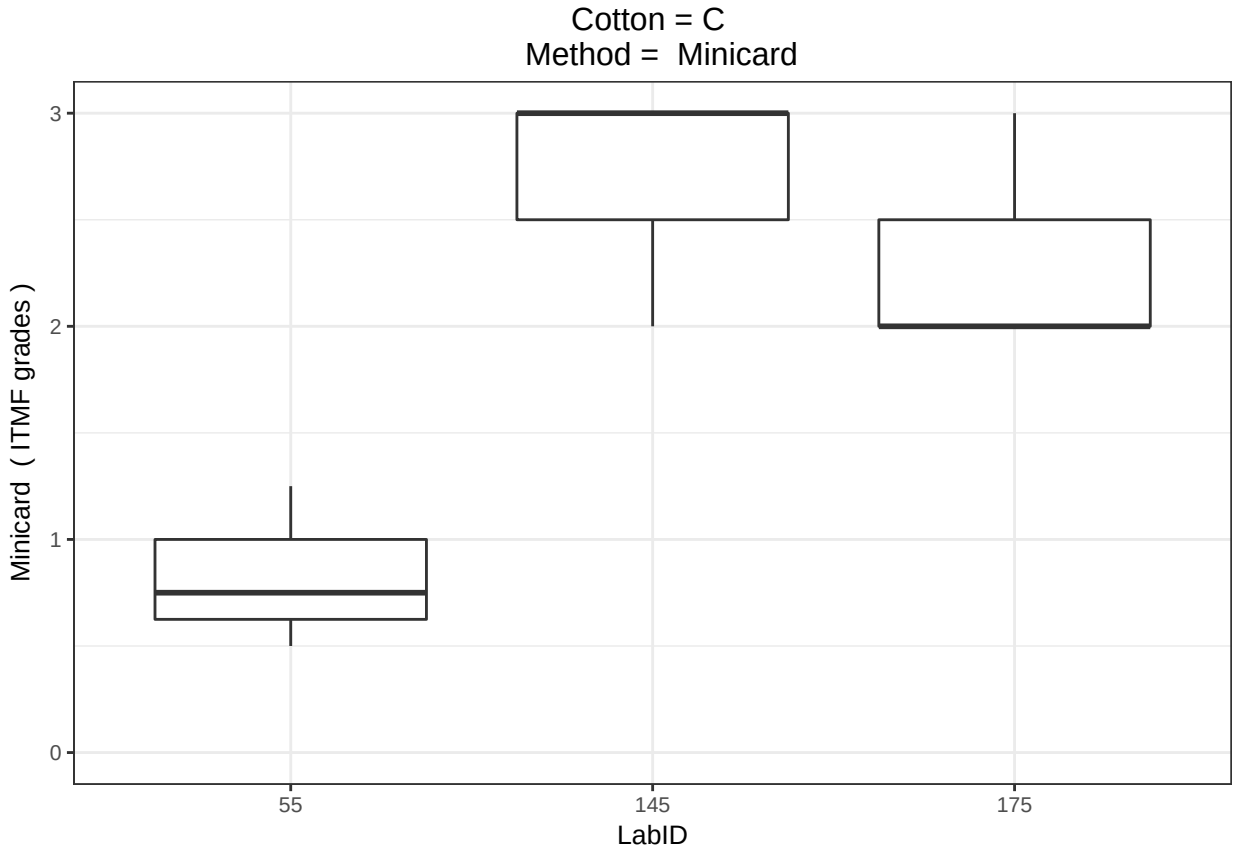

Cotton = C
Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
0
75
80
110
125
150
LabID

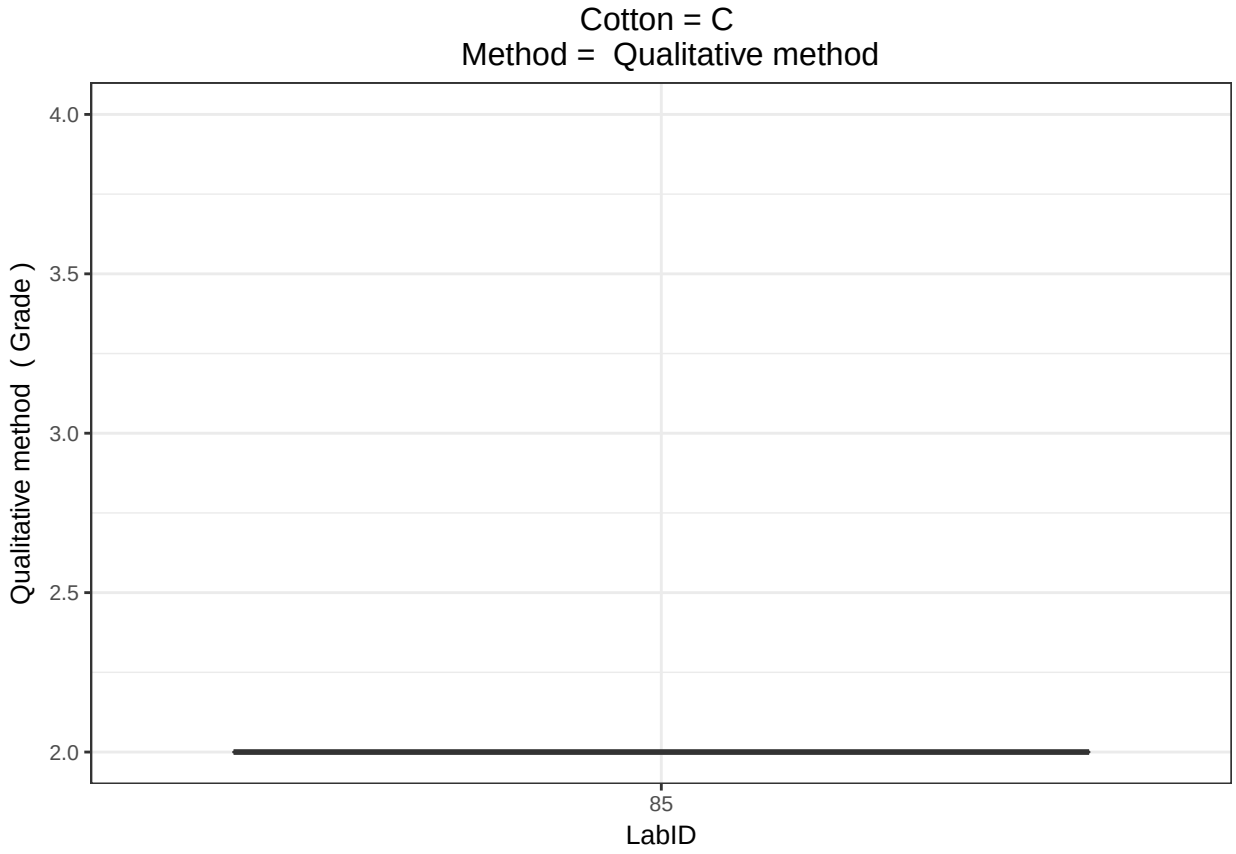

Cotton = C
Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
4
3
2
1
100
LabID

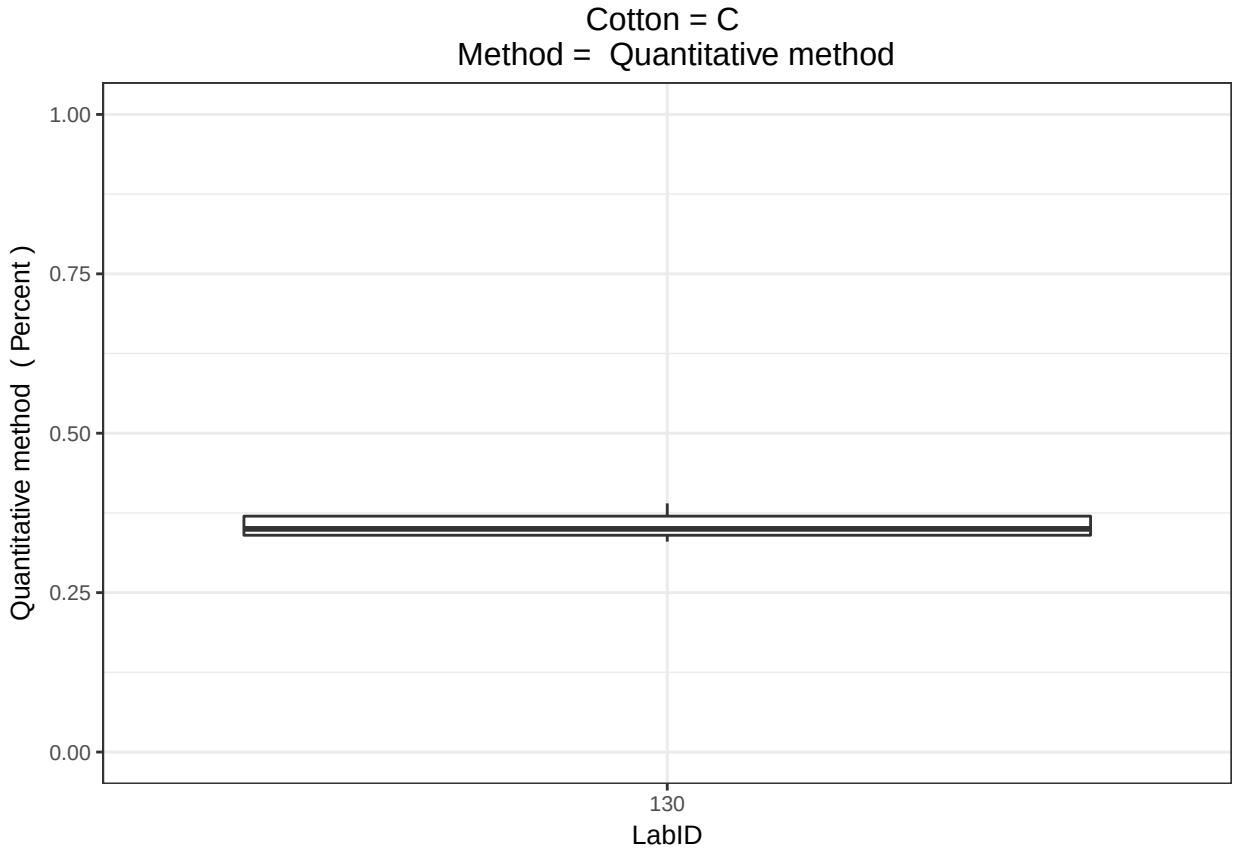

Cotton = C
Method = H2SD
H2SD (Sticky points)
50
40
30
20
10
0
5
40
60
105
LabID

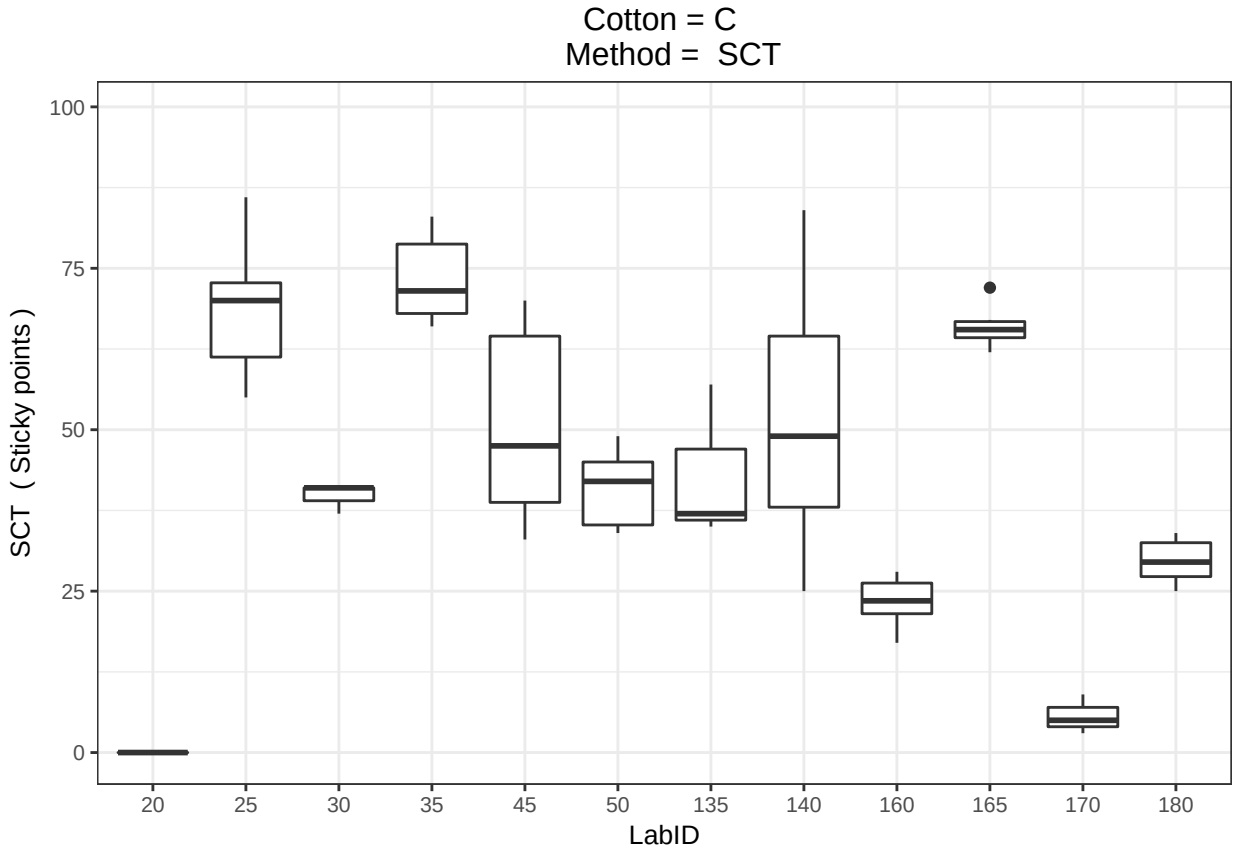

Cotton = C
Method = HSI−NIR
HSI−NIR (Sticky points)
140
120
100
115
LabID

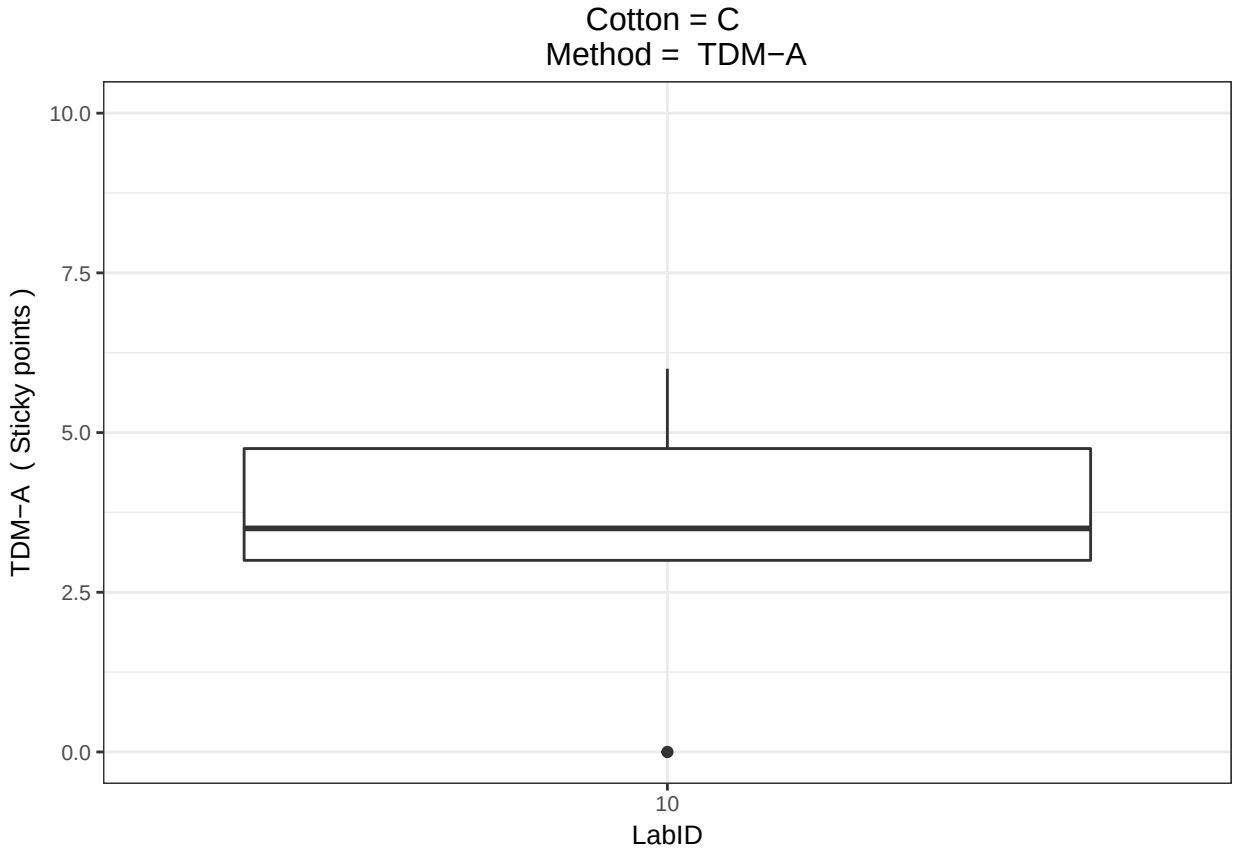

Cotton = C
Method = KOTITI
KOTITI (Kotiti grade)
9
8
7
6
95
LabID


Cotton = C
Method = Minicard
Minicard (ITMF grades)
3
2
1
0
55
145
175
LabID

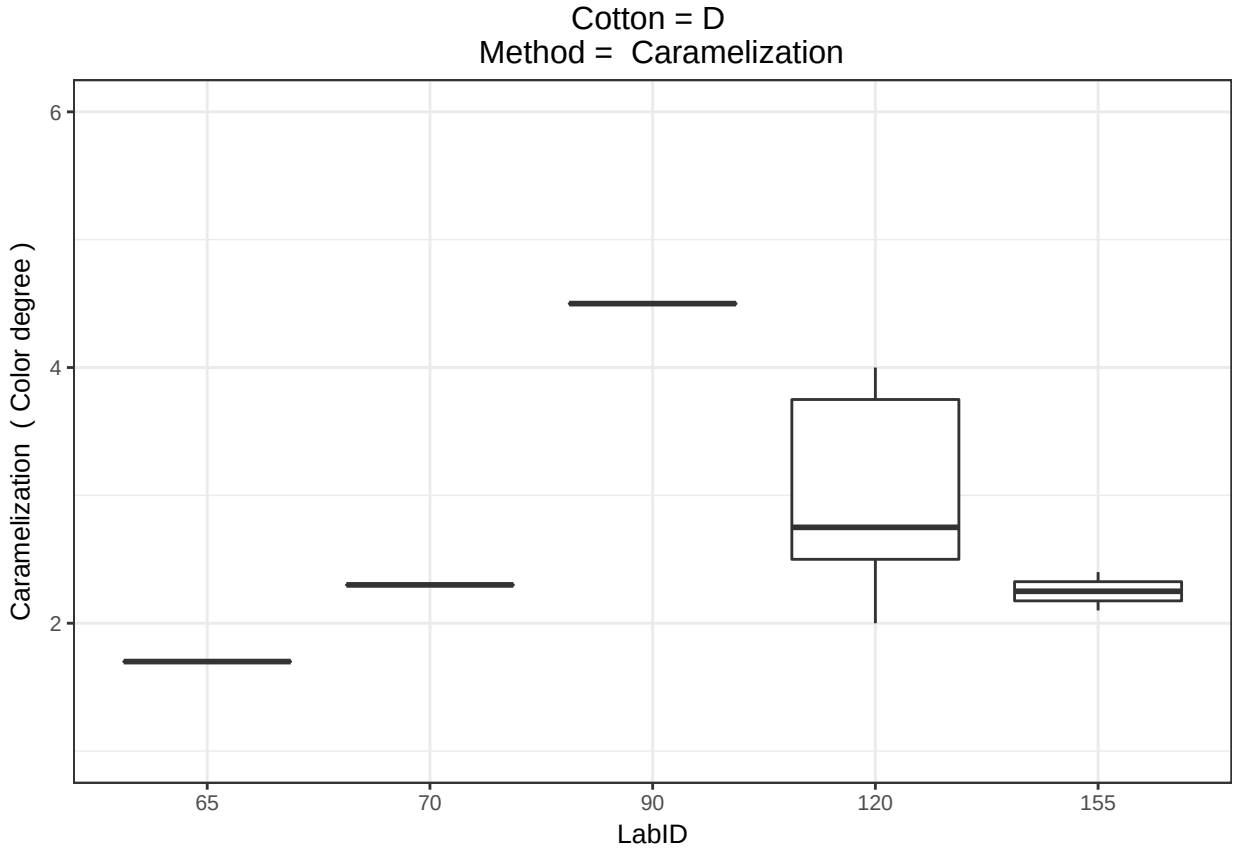

Cotton = C
Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
85
LabID

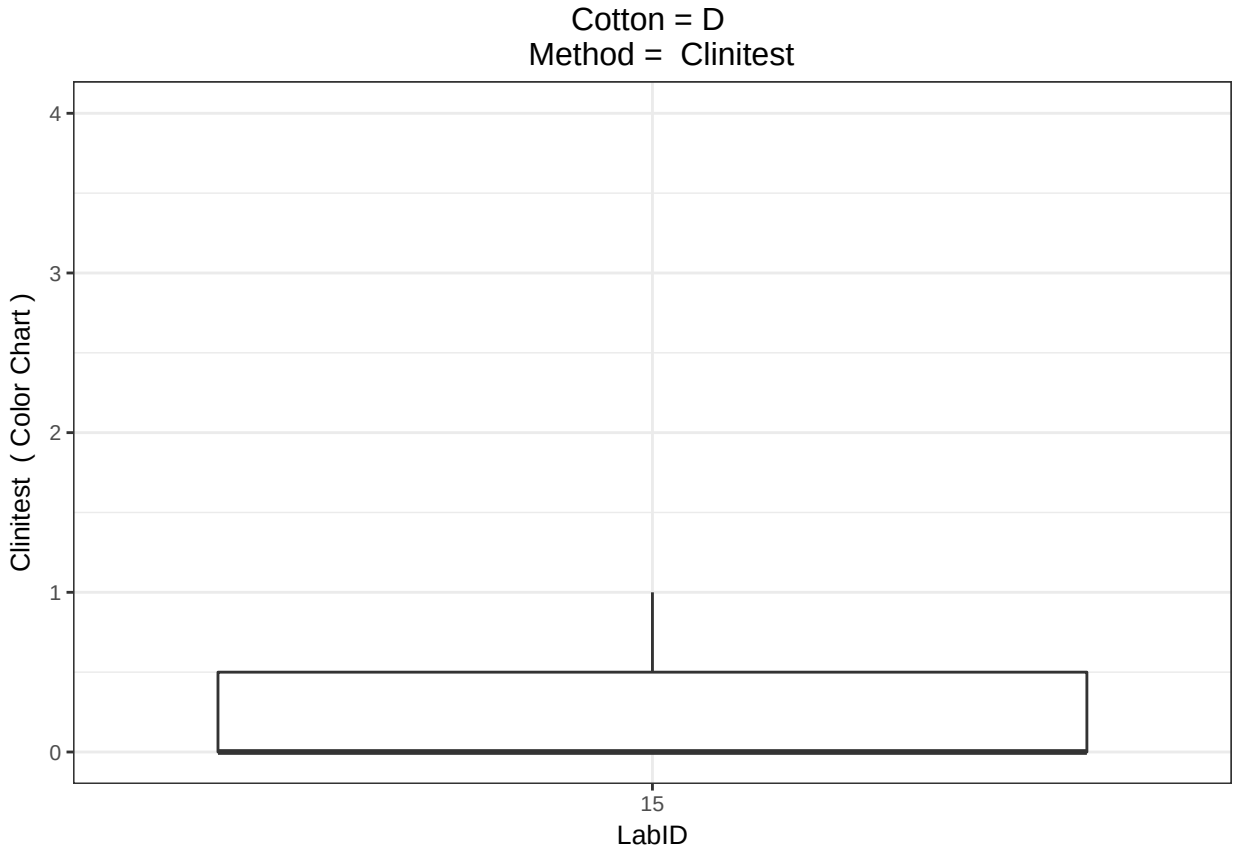

Cotton = C
Method = Quantitative method
1.00
0.75
0.50
0.25
0.00
Quantitative method (Percent)
130
LabID

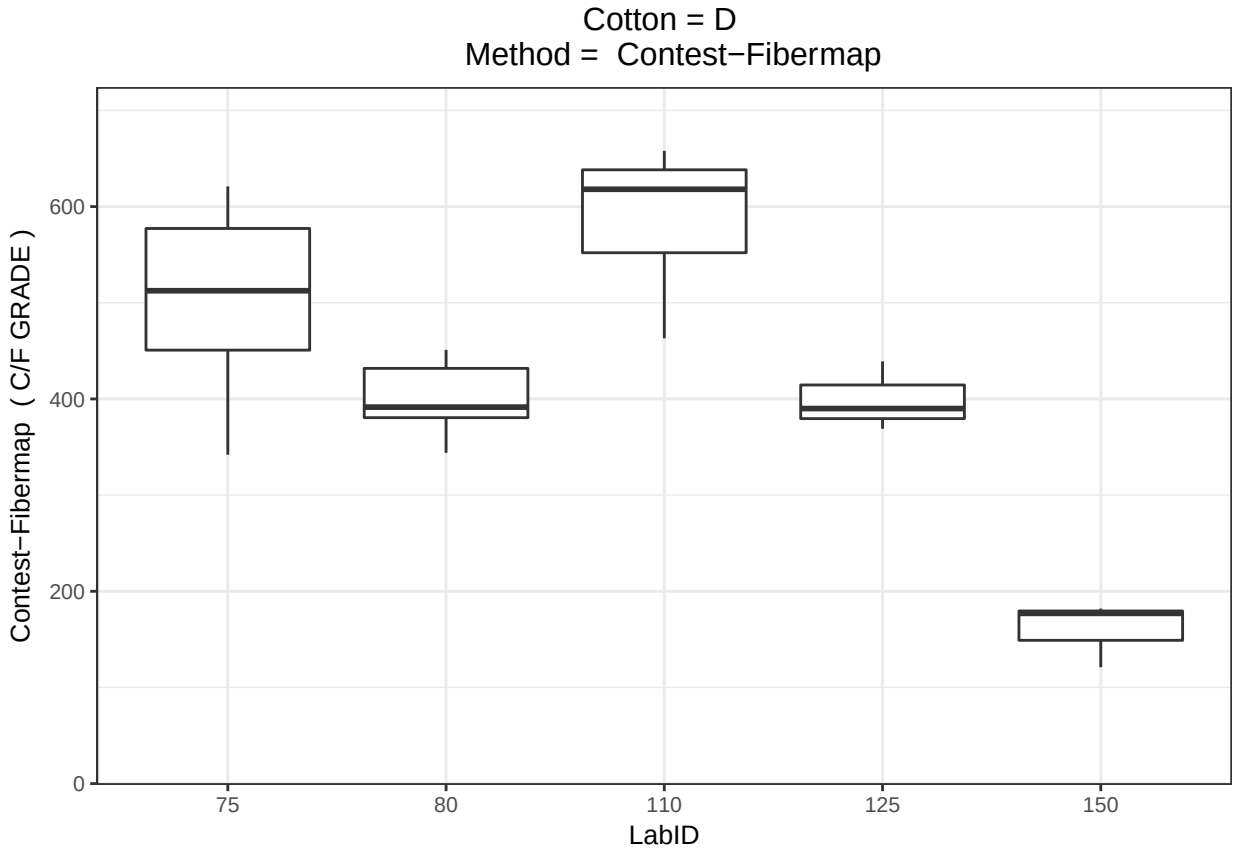

Cotton = C
Method = SCT
SCT (Sticky points)
100
75
50
25
0
20
25
30
35
45
50
135
140
160
165
170
180
LabID

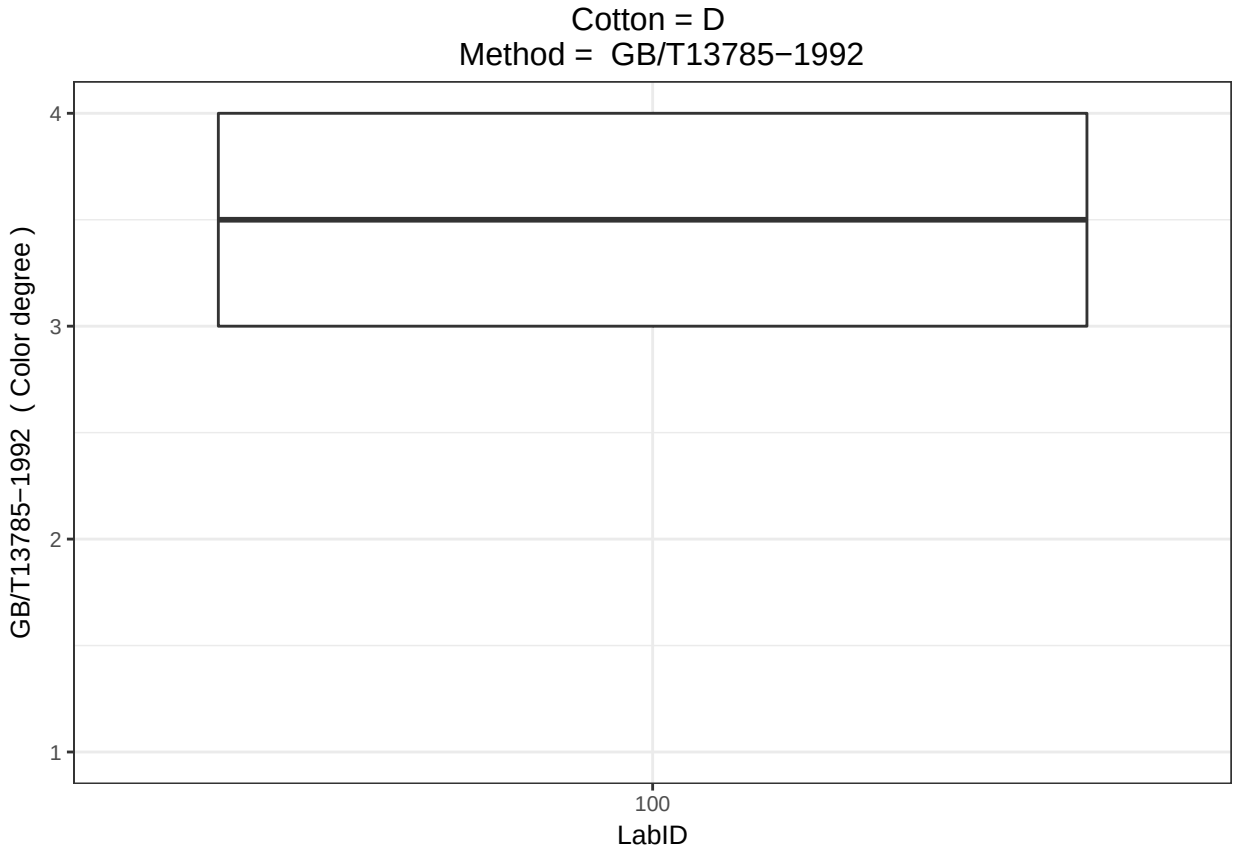

Cotton = C
Method = TDM−A
TDM−A (Sticky points)
10.0
7.5
5.0
2.5
0.0
10
LabID

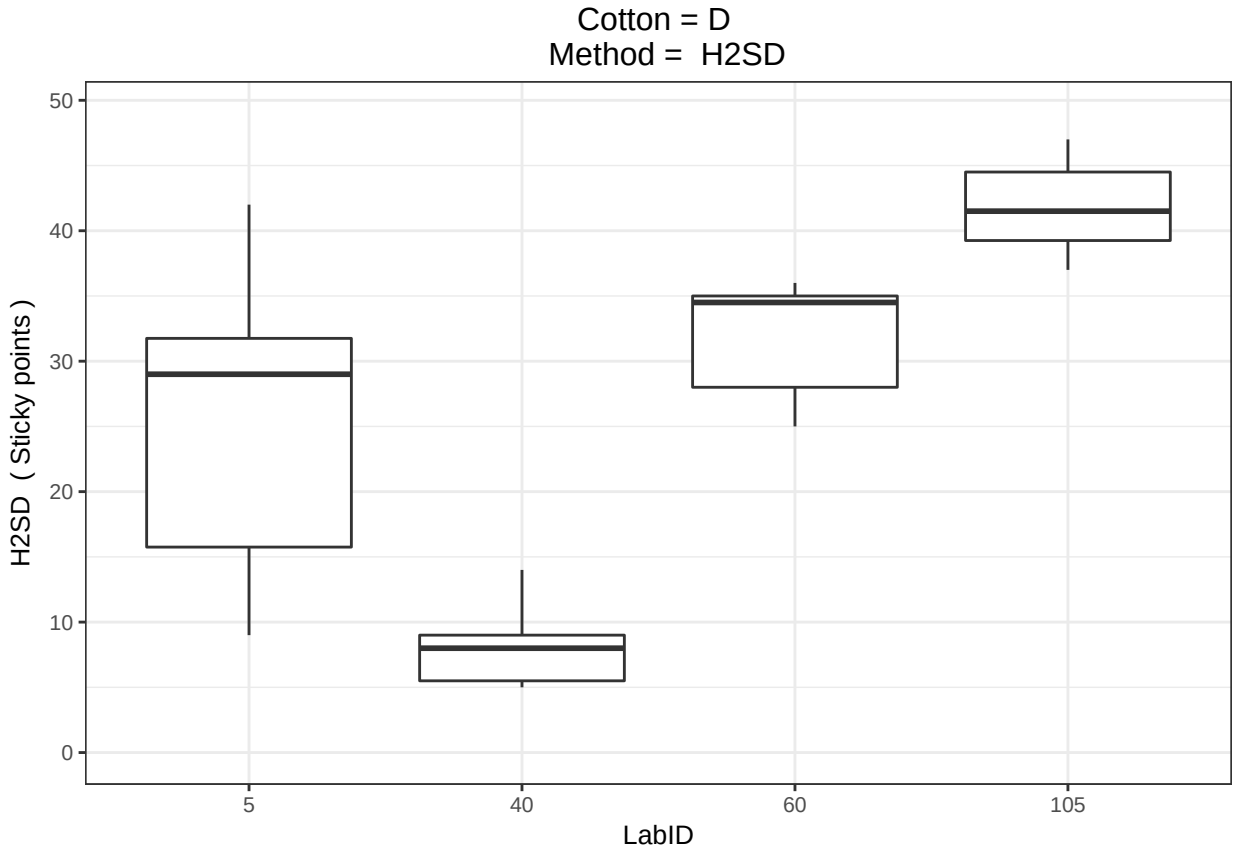
Boxplots for Cotton D

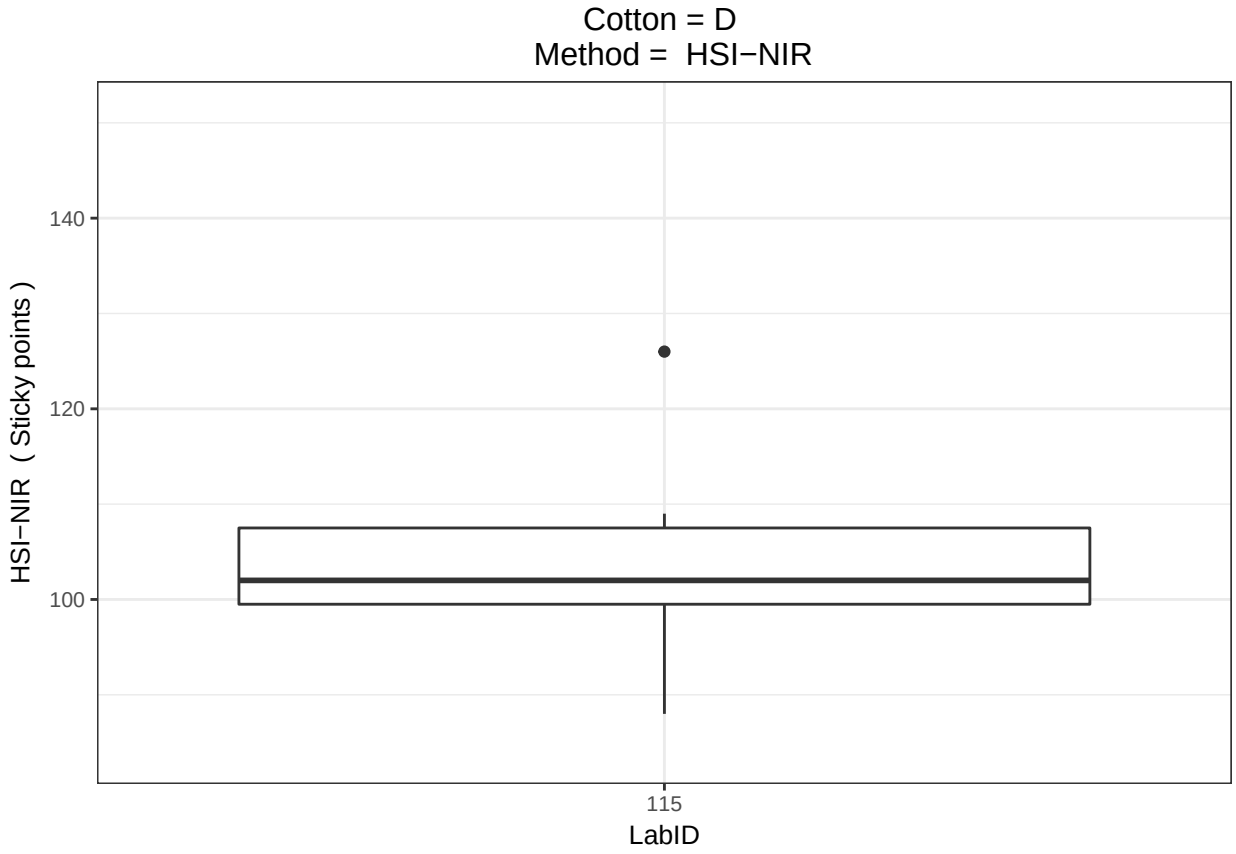


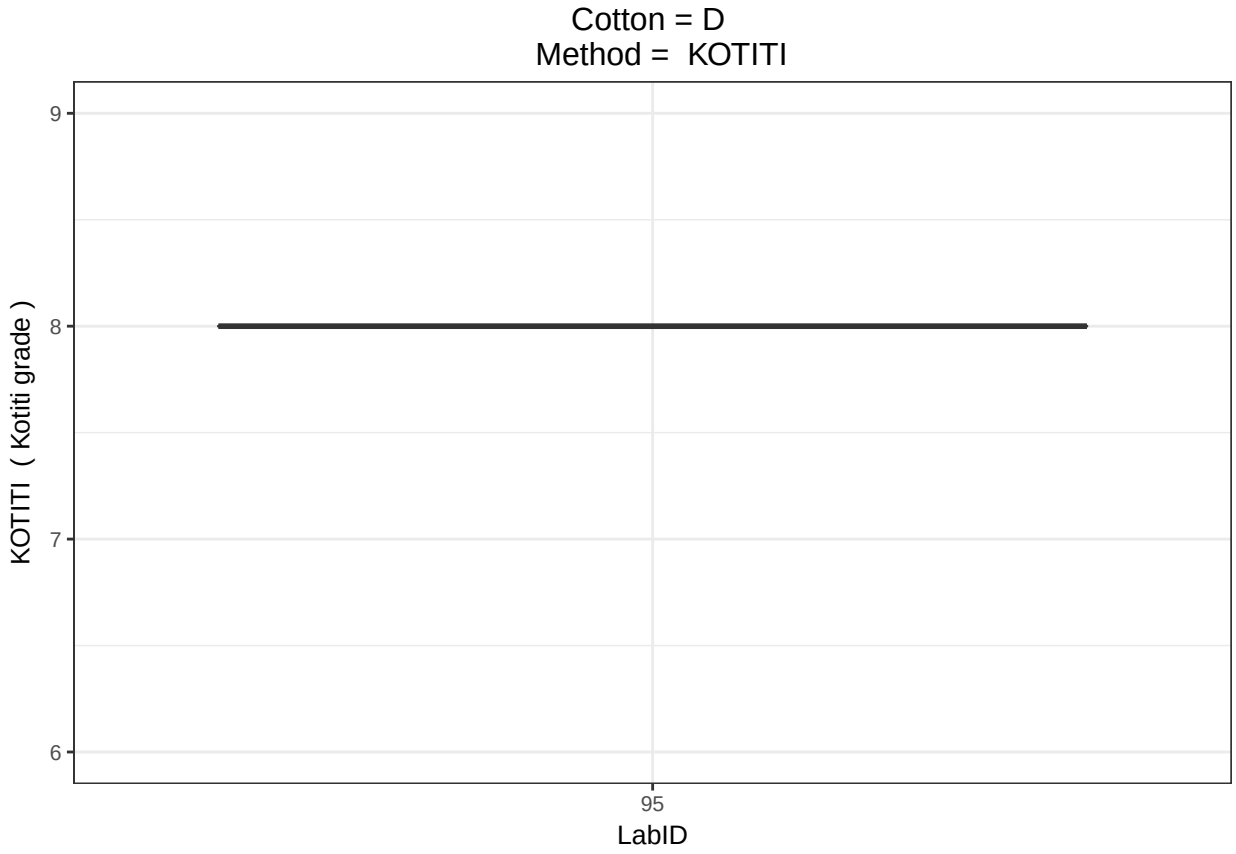

Cotton = D
Method = Clinitest
Clinitest (Color Chart)
4
3
2
1
0
15
LabID

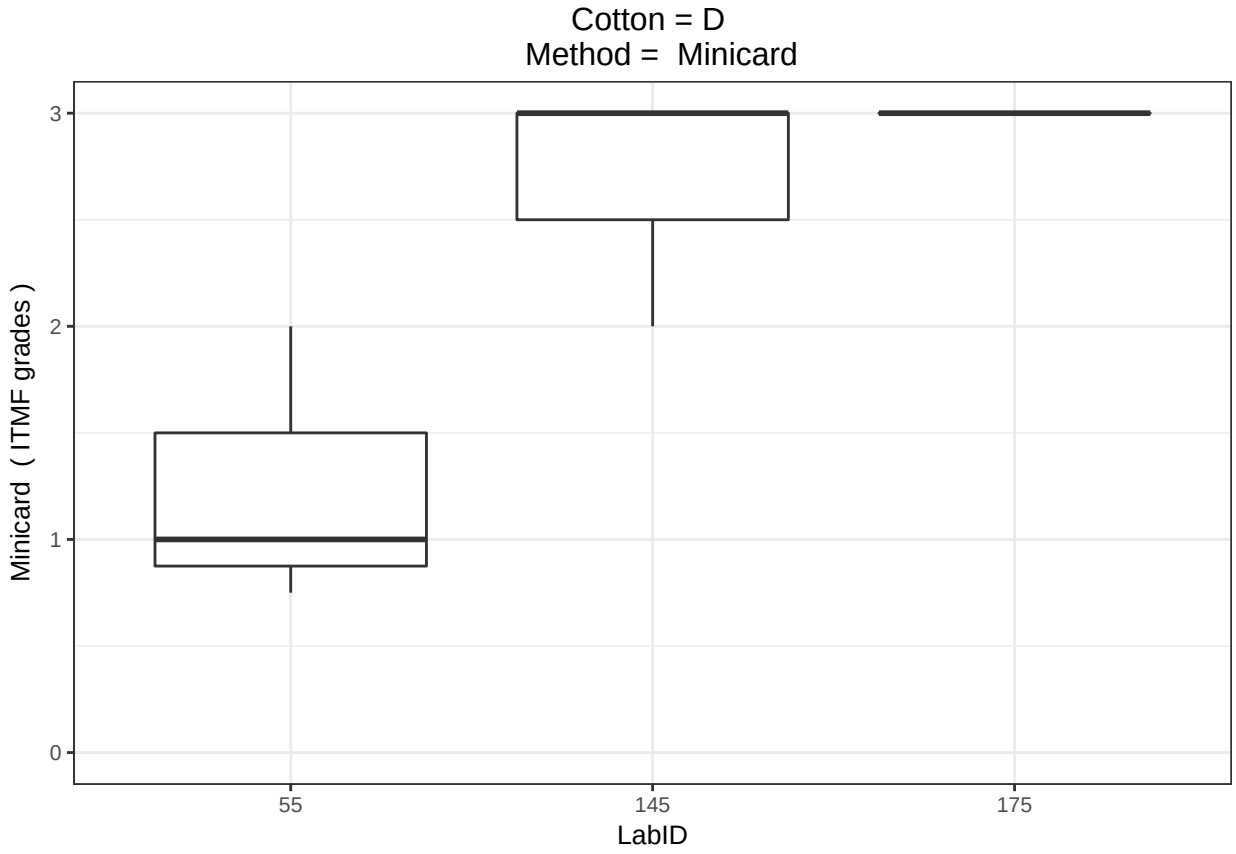

Cotton = D
Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
0
75
80
110
125
150
LabID

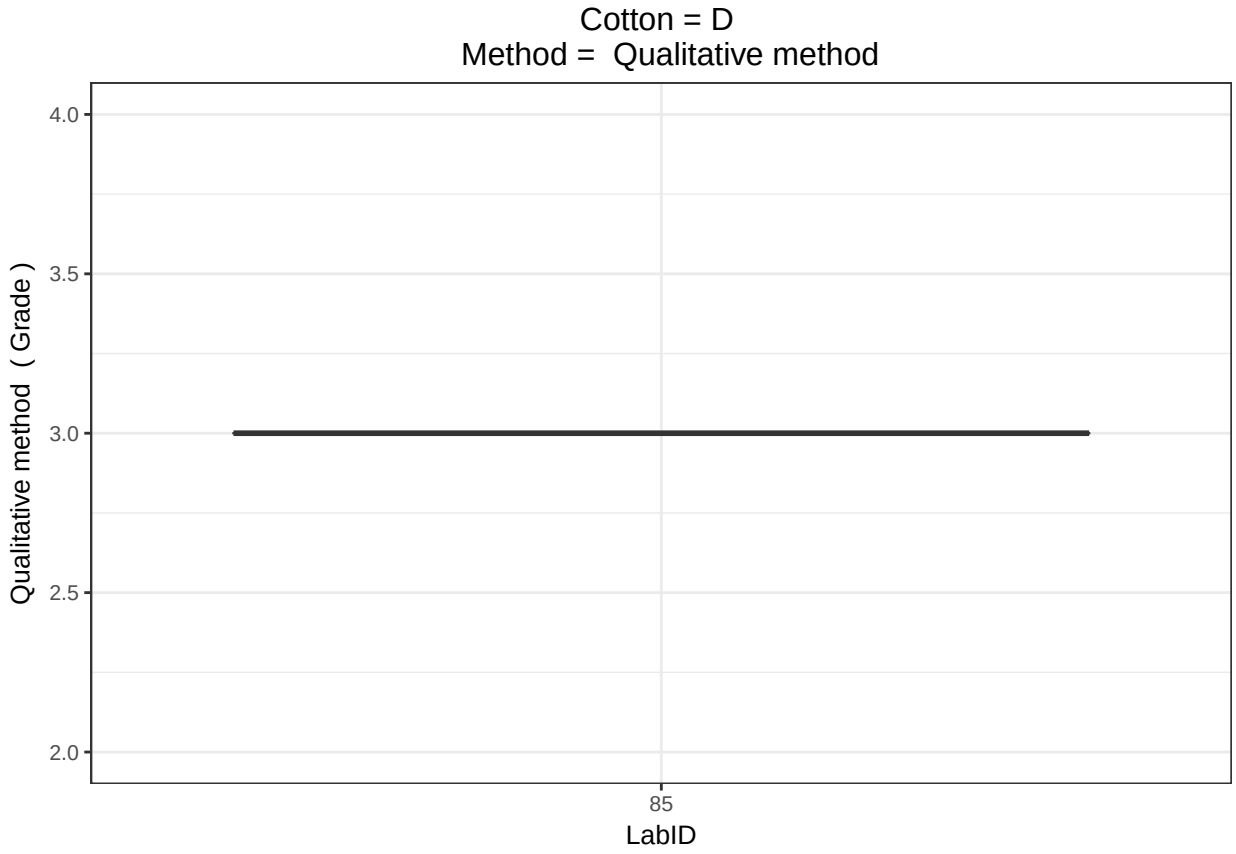

Cotton = D
Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
4
3
2
1
100
LabID

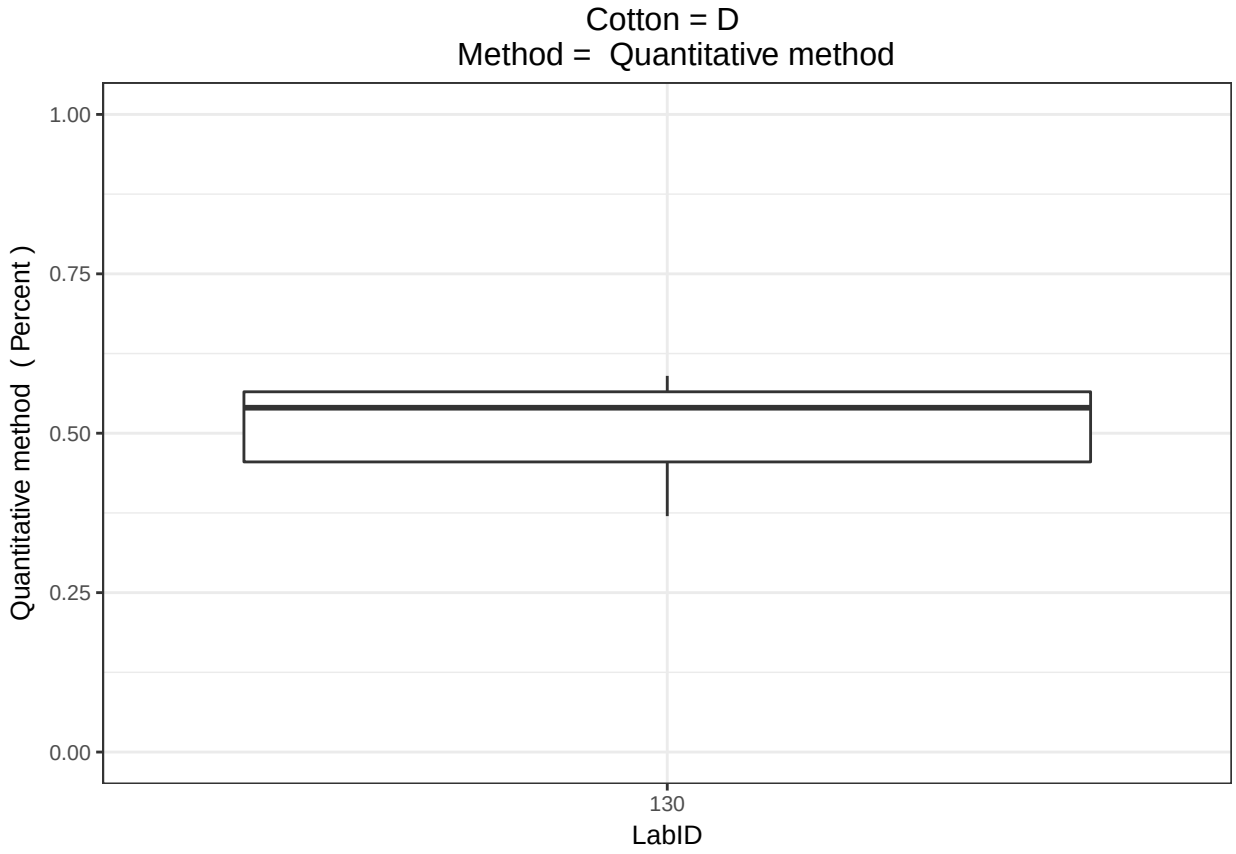

Cotton = D
Method = H2SD
H2SD (Sticky points)
50
40
30
20
10
0
5
40
60
105
LabID

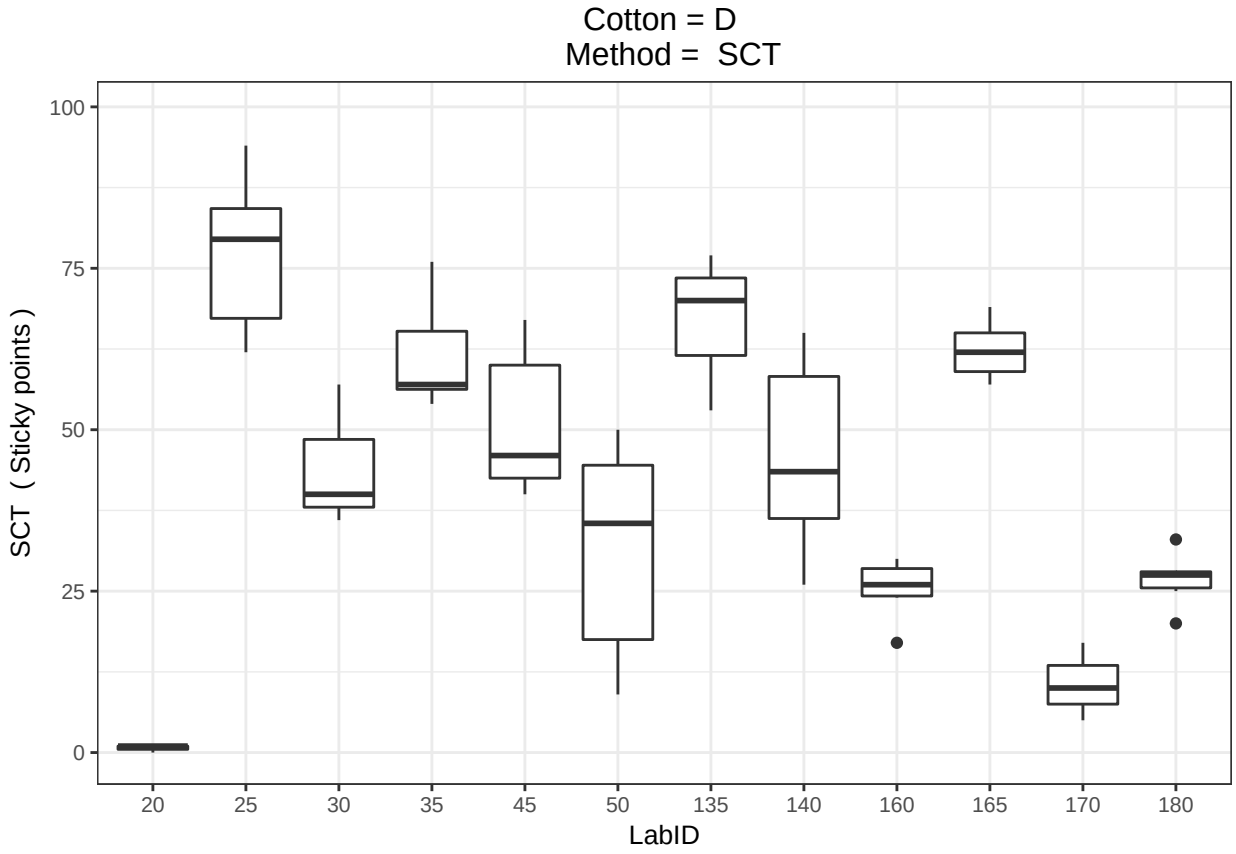

Cotton = D
Method = HSI−NIR
HSI−NIR (Sticky points)
140
120
100
115
LabID

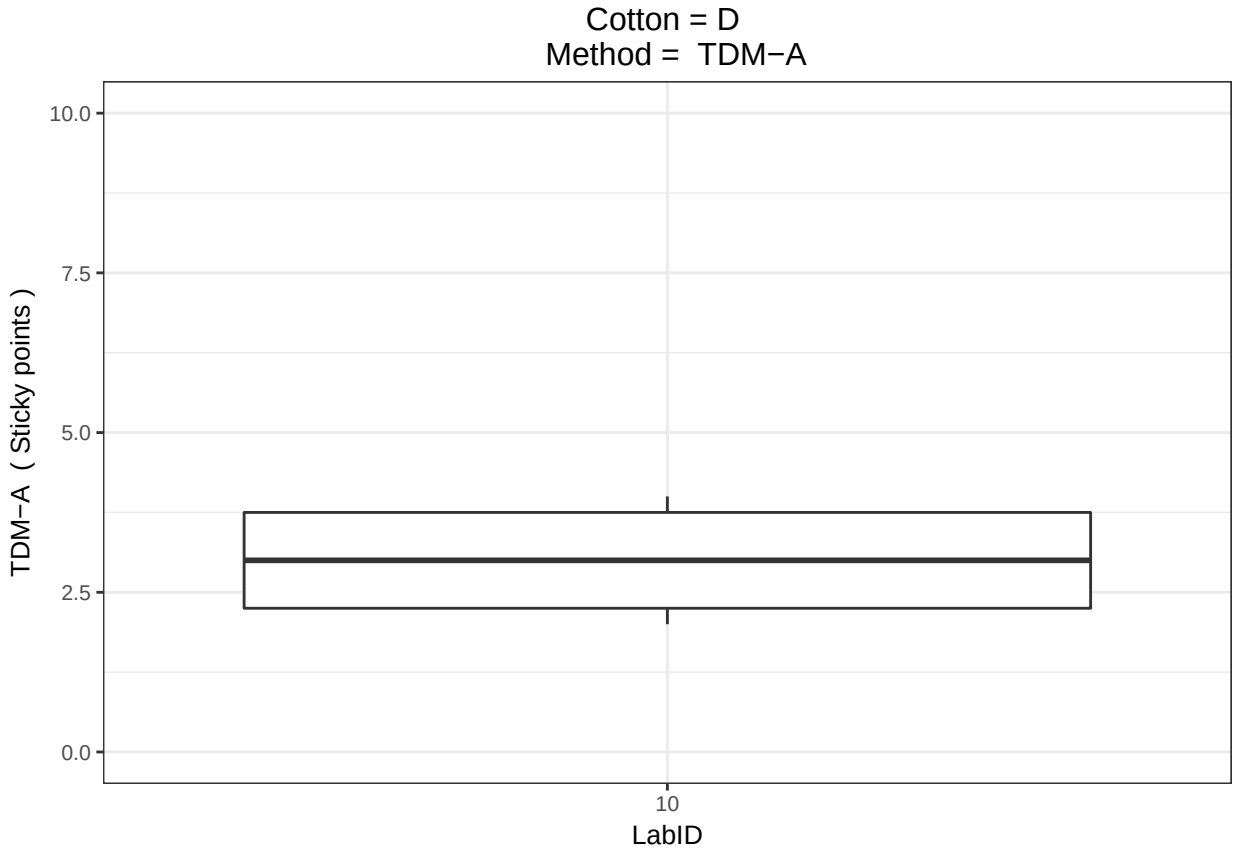

Cotton = D
Method = KOTITI
KOTITI (Kotiti grade)
9
8
7
6
95
LabID


Cotton = D
Method = Minicard
Minicard (ITMF grades)
3
2
1
0
55
145
175
LabID

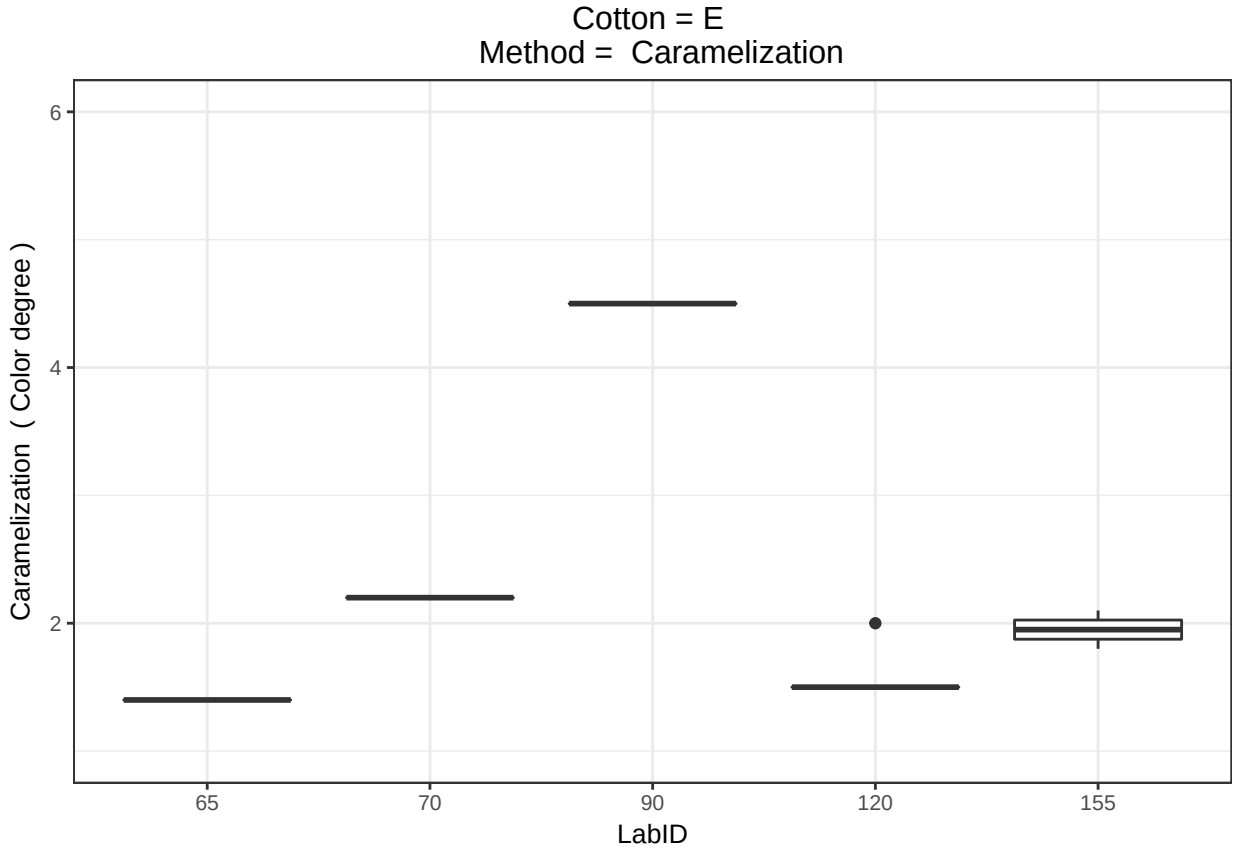

Cotton = D
Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
85
LabID

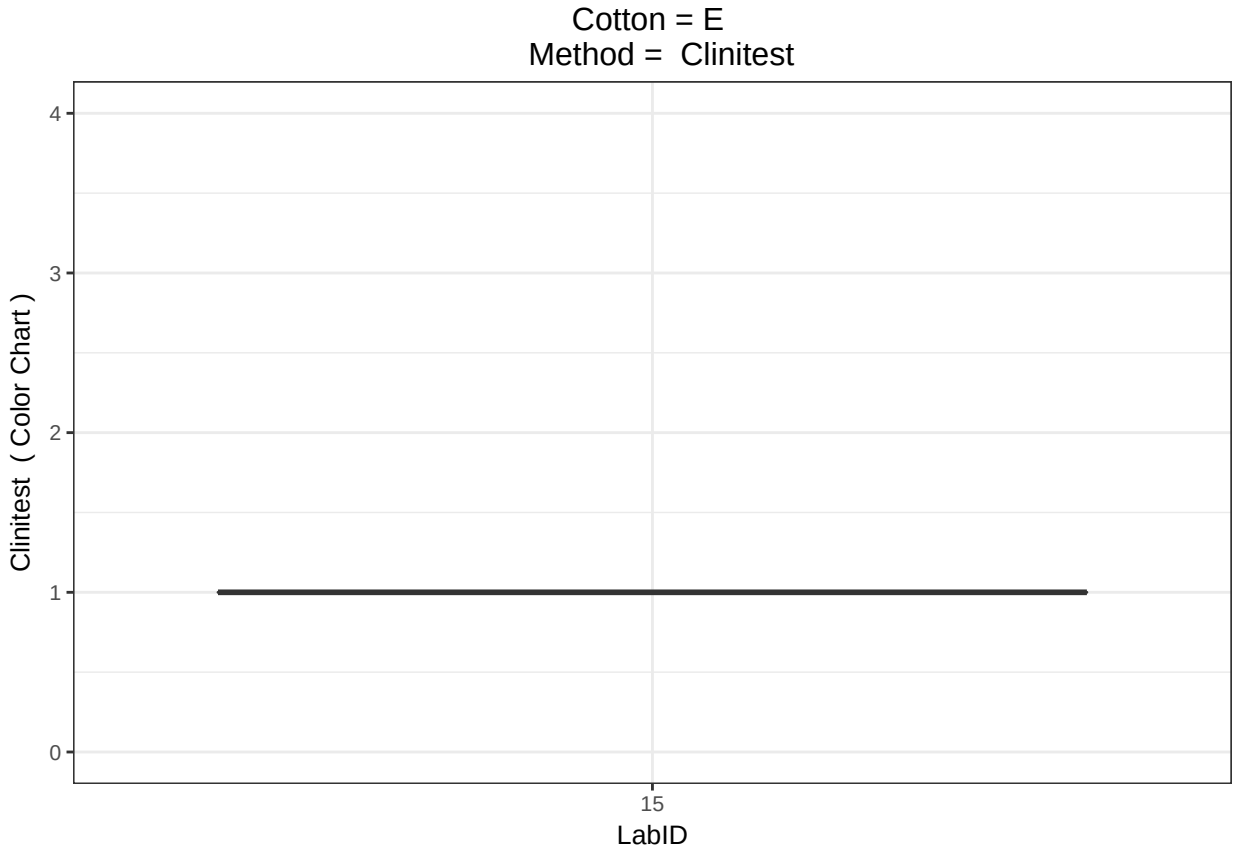

Cotton = D
Method = Quantitative method
1.00
0.75
0.50
0.25
0.00
Quantitative method (Percent)
130
LabID

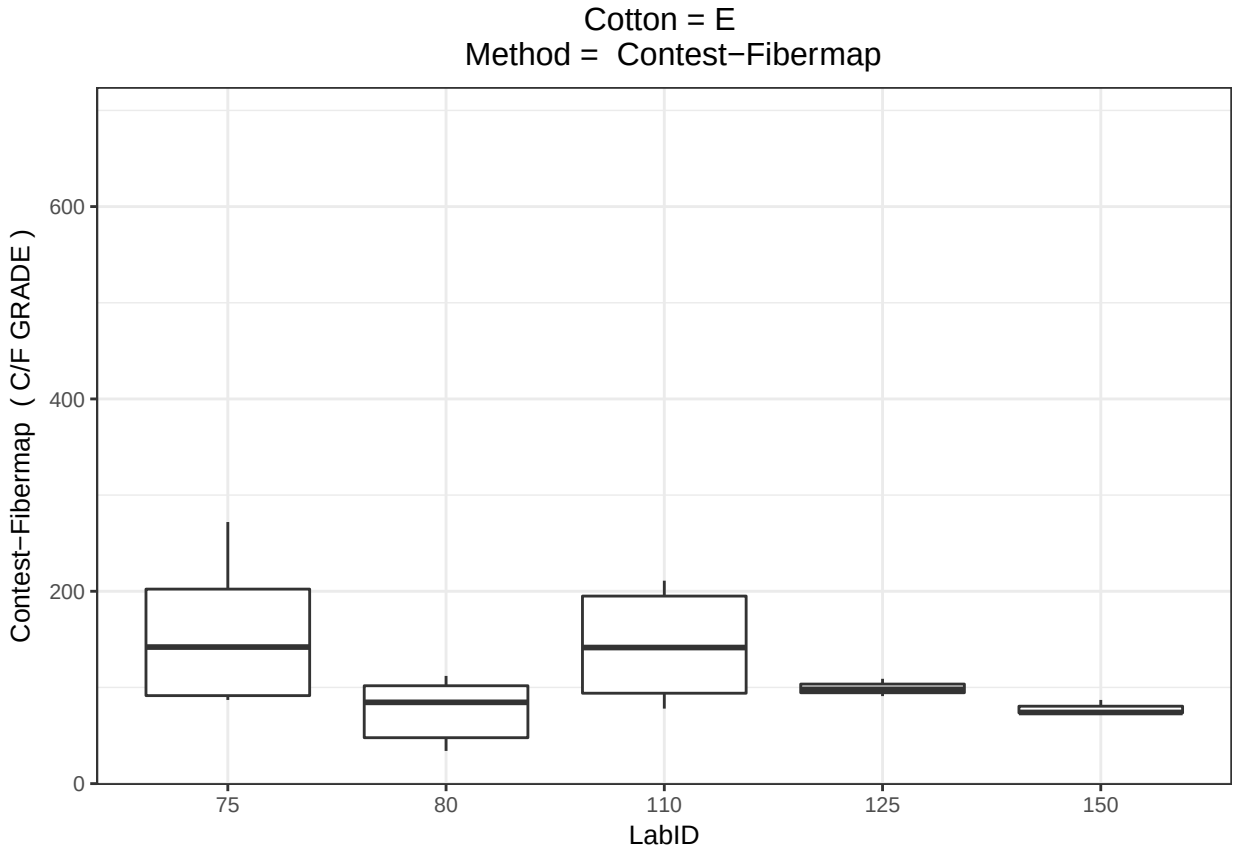

Cotton = D
Method = SCT
SCT (Sticky points)
100
75
50
25
0
20
25
30
35
45
50
135
140
160
165
170
180
LabID

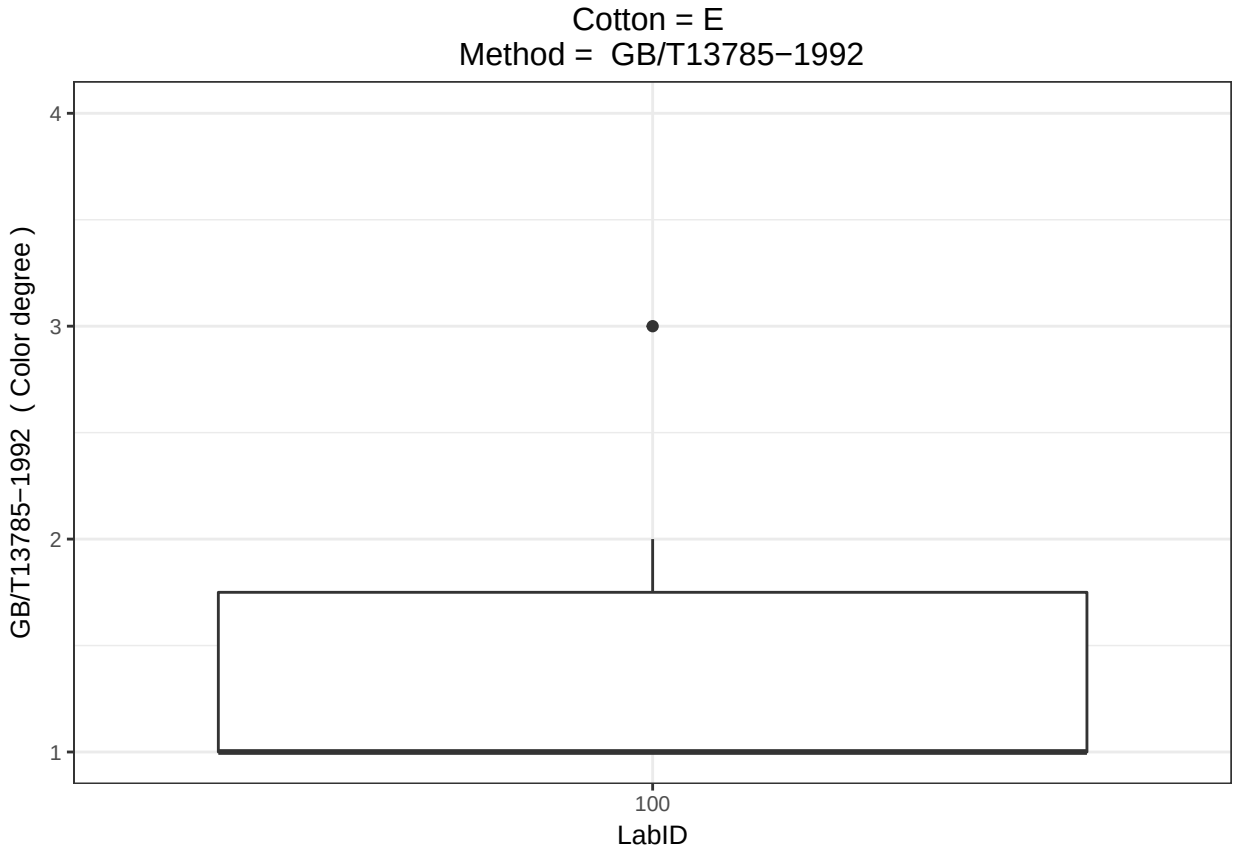

Cotton = D
Method = TDM−A
TDM−A (Sticky points)
10.0
7.5
5.0
2.5
0.0
10
LabID

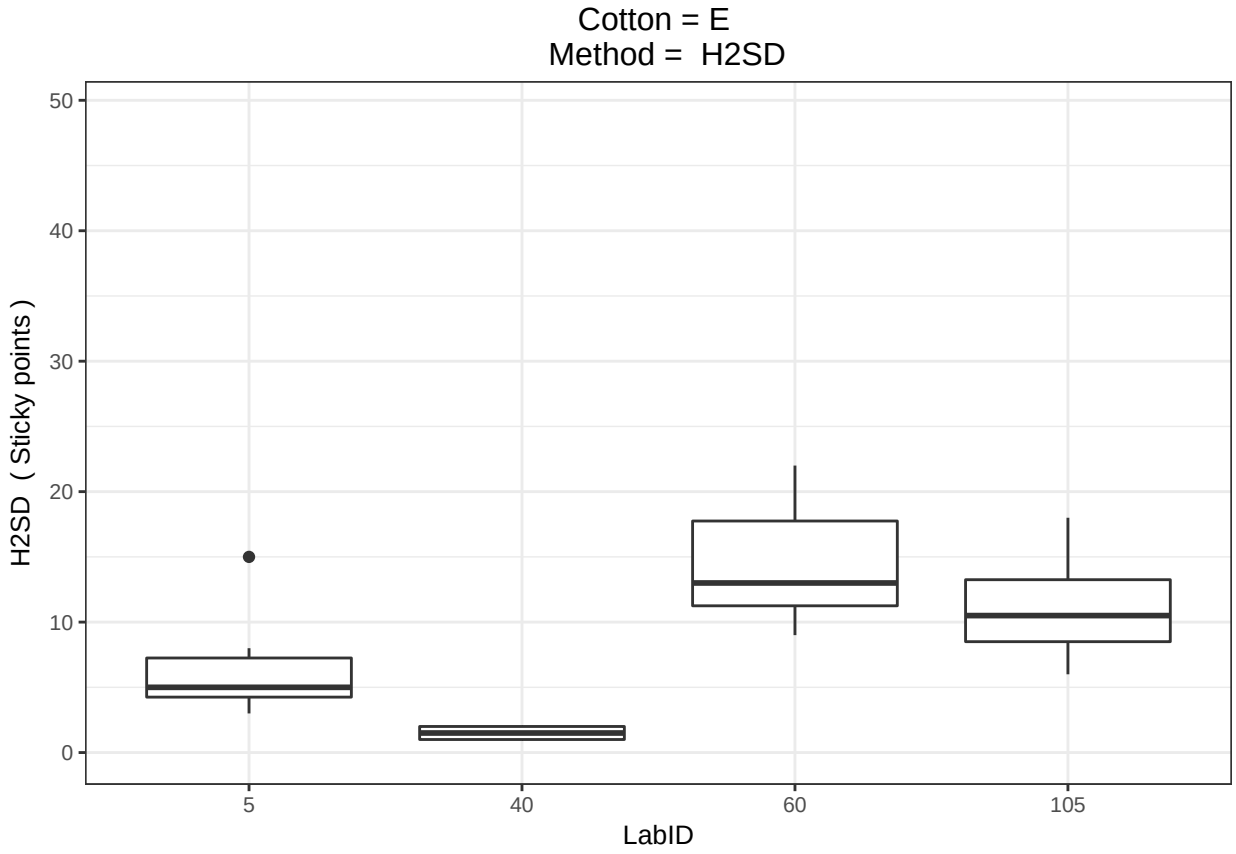
Boxplots for Cotton E

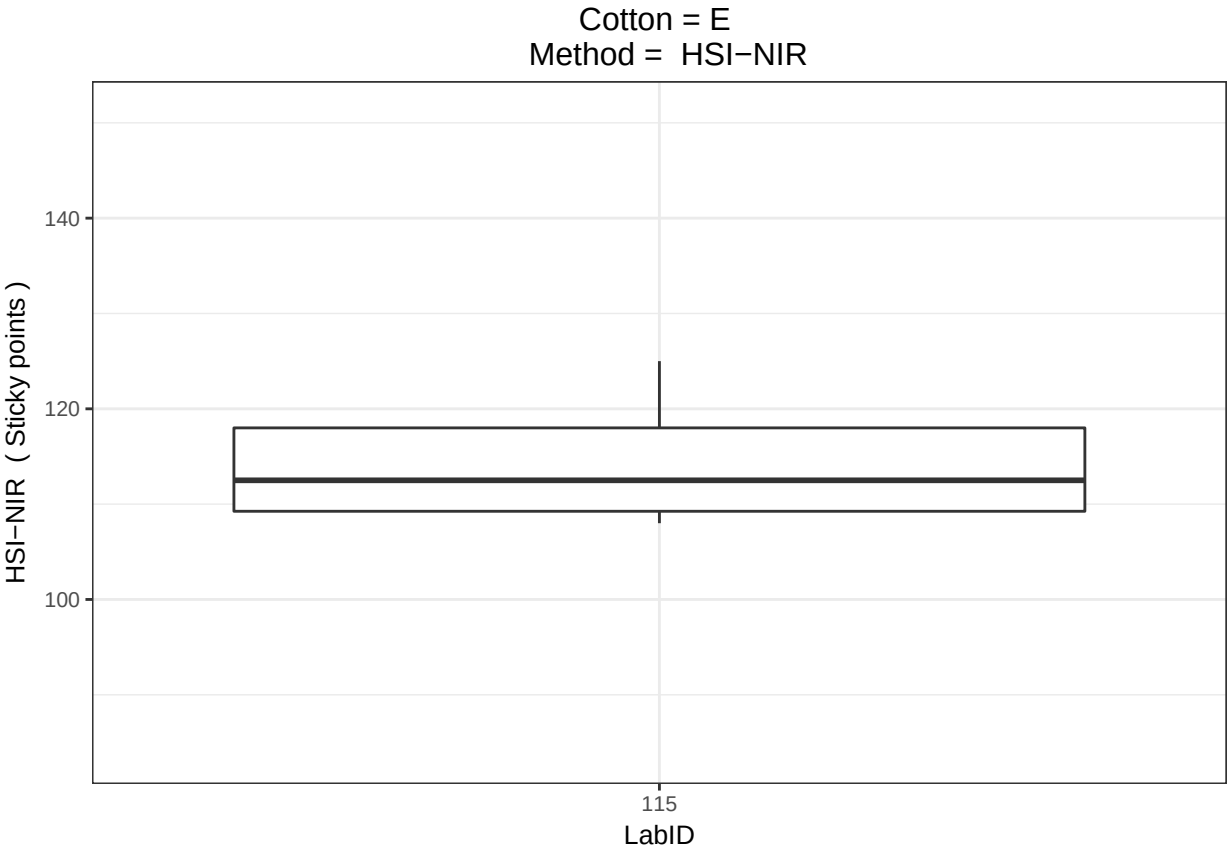


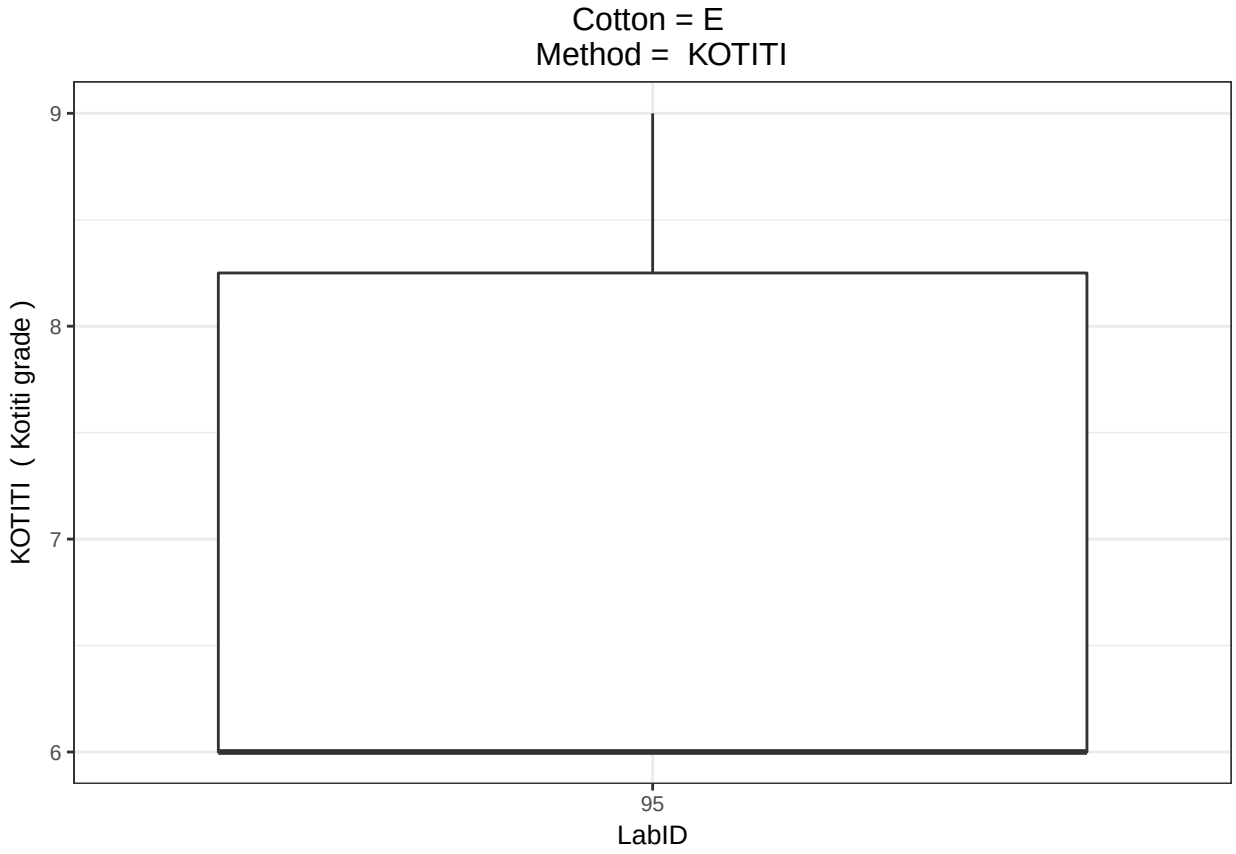

Cotton = E
Method = Clinitest
Clinitest (Color Chart)
4
3
2
1
0
15
LabID

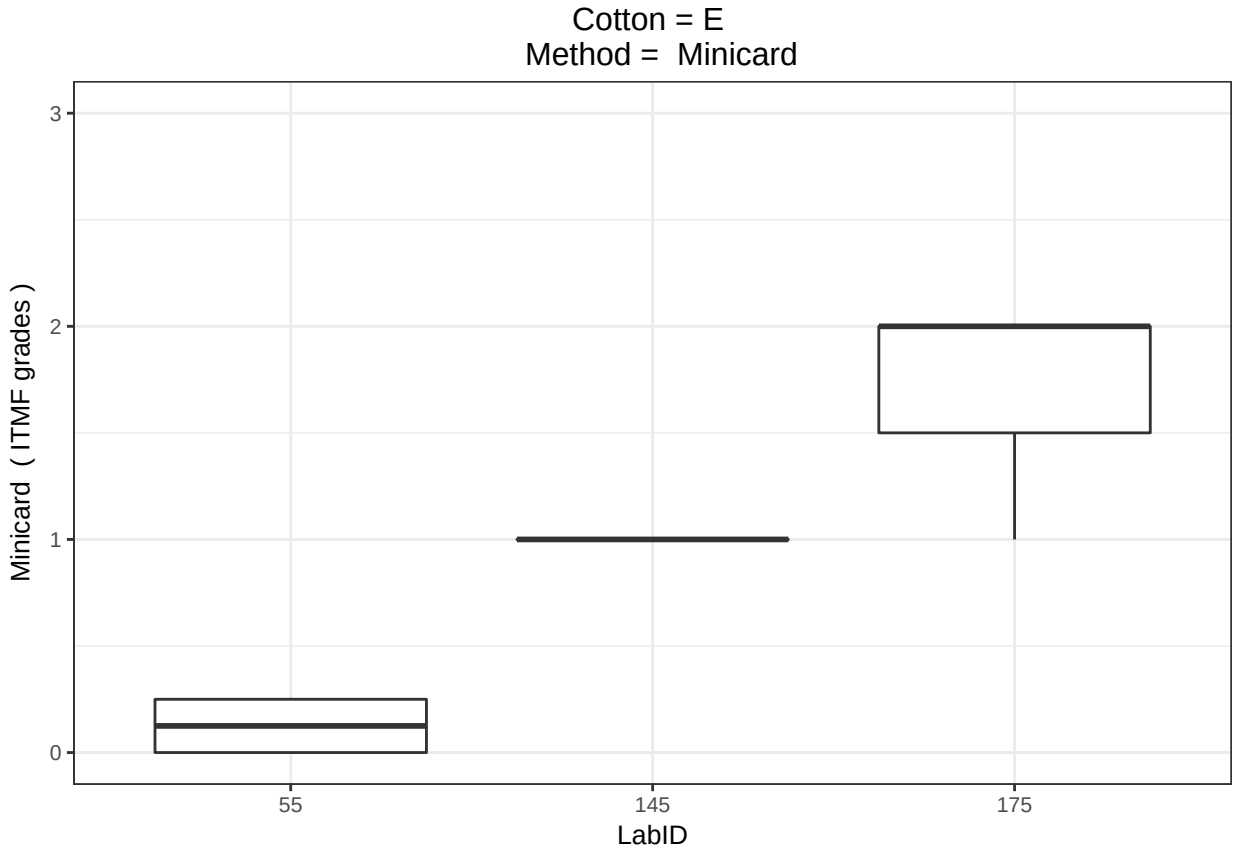

Cotton = E
Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
0
75
80
110
125
150
LabID

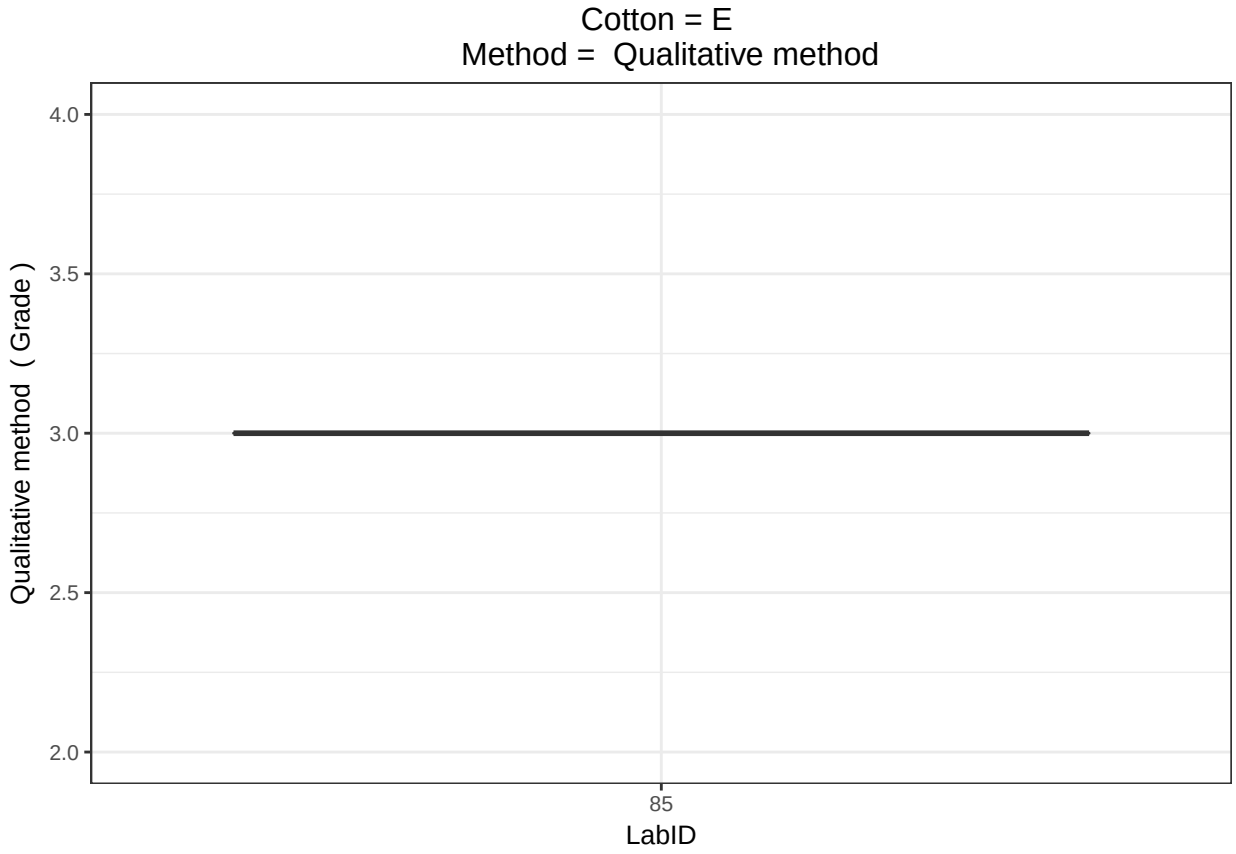

Cotton = E
Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
4
3
2
1
100
LabID

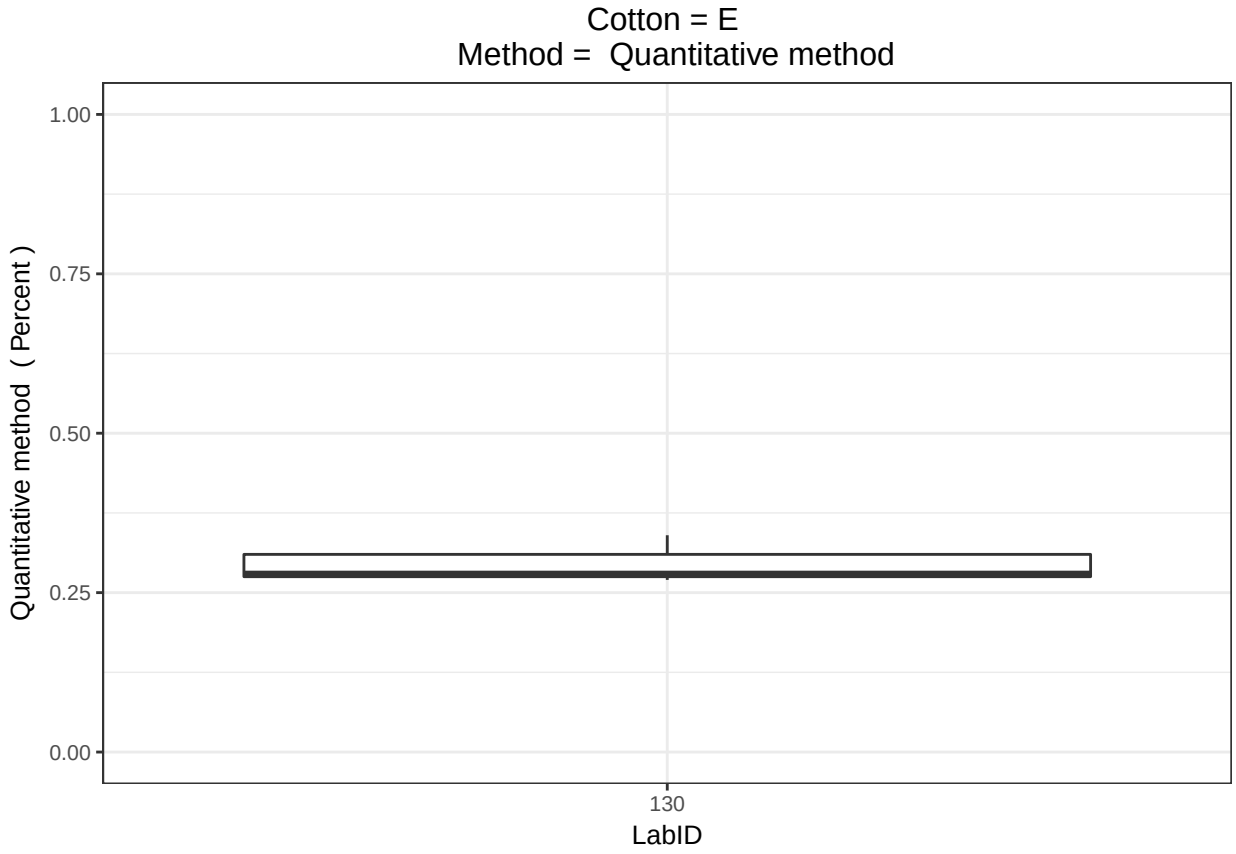

Cotton = E
Method = H2SD
H2SD (Sticky points)
50
40
30
20
10
0
5
40
60
105
LabID

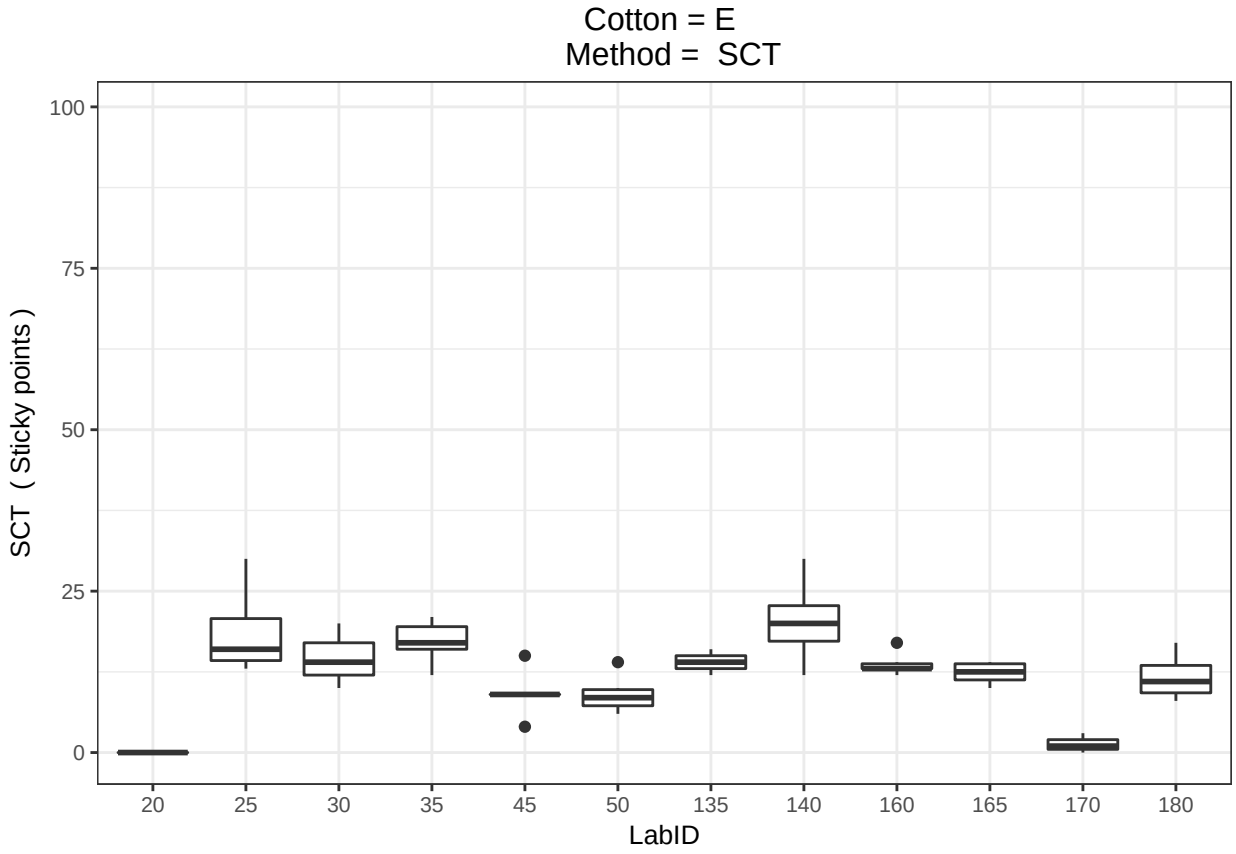

Cotton = E
Method = HSI−NIR
HSI−NIR (Sticky points)
140
120
100
115
LabID

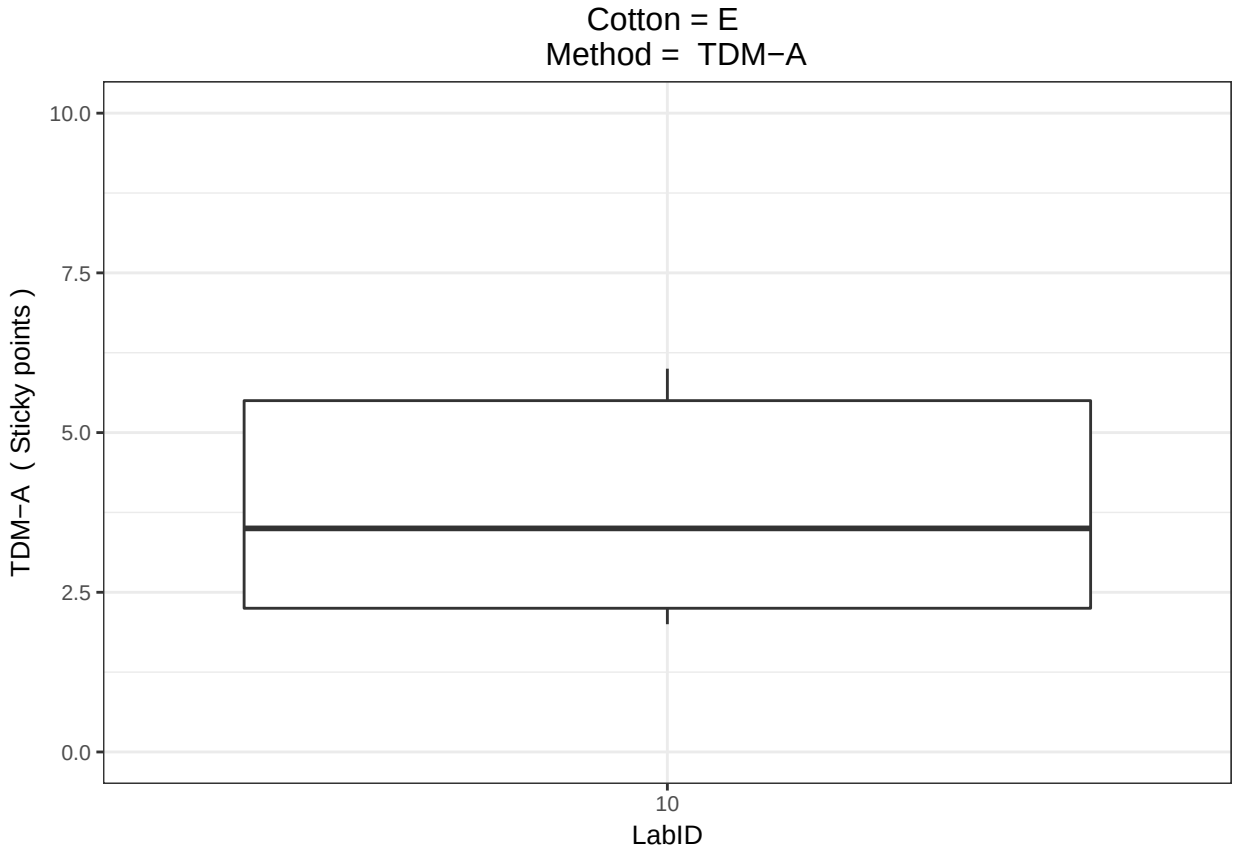

Cotton = E
Method = KOTITI
9
8
7
6
KOTITI (Kotiti grade)
95
LabID


Cotton = E
Method = Minicard
Minicard (ITMF grades)
3
2
1
0
55
145
175
LabID


Cotton = E
Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
85
LabID

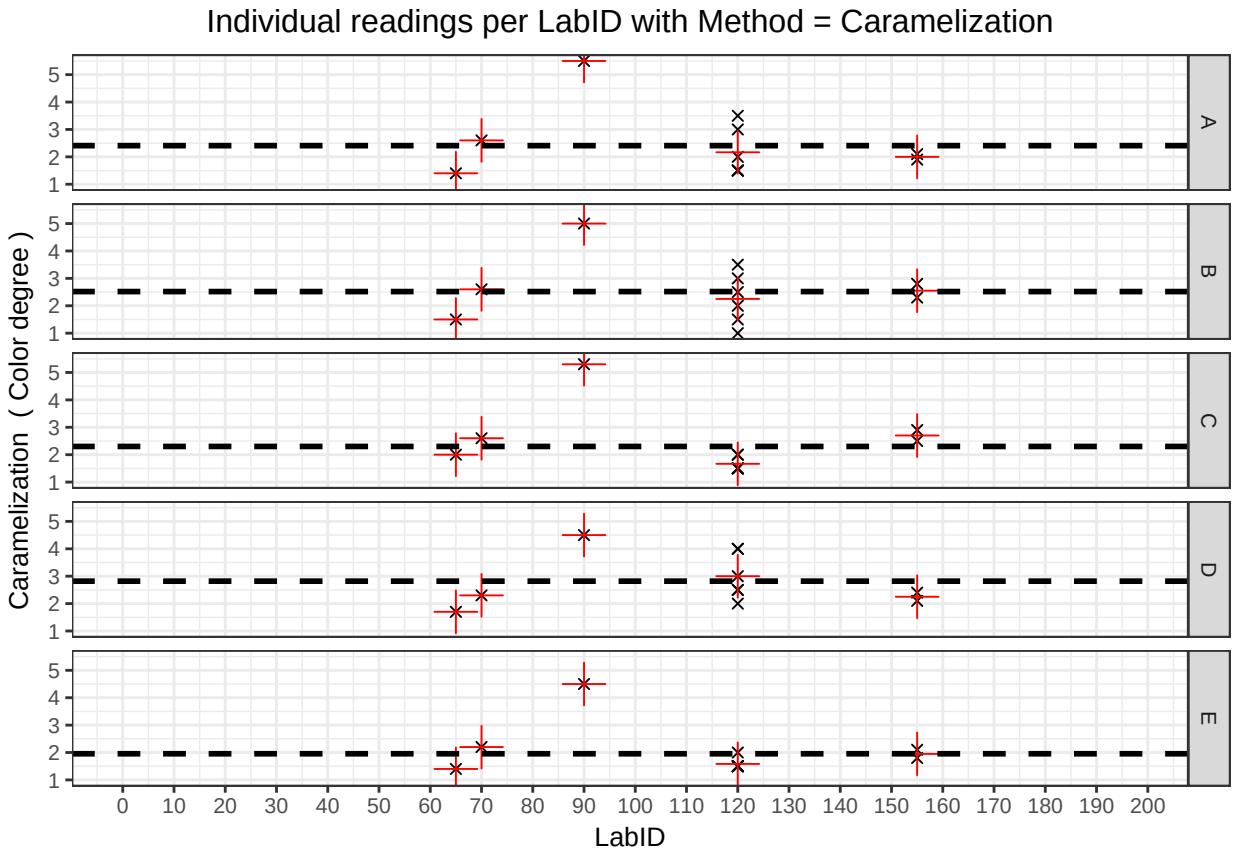

Cotton = E
Method = Quantitative method
Quantitative method (Percent)
1.00
0.75
0.50
0.25
0.00
130
LabID


Cotton = E
Method = SCT
SCT (Sticky points)
100
75
50
25
0
20
25
30
35
45
50
135
140
160
165
170
180
LabID


Cotton = E
Method = TDM−A
TDM−A (Sticky points)
10.0
7.5
5.0
2.5
0.0
10
LabID

Charts of individual readings per Method and LabID for all cottons

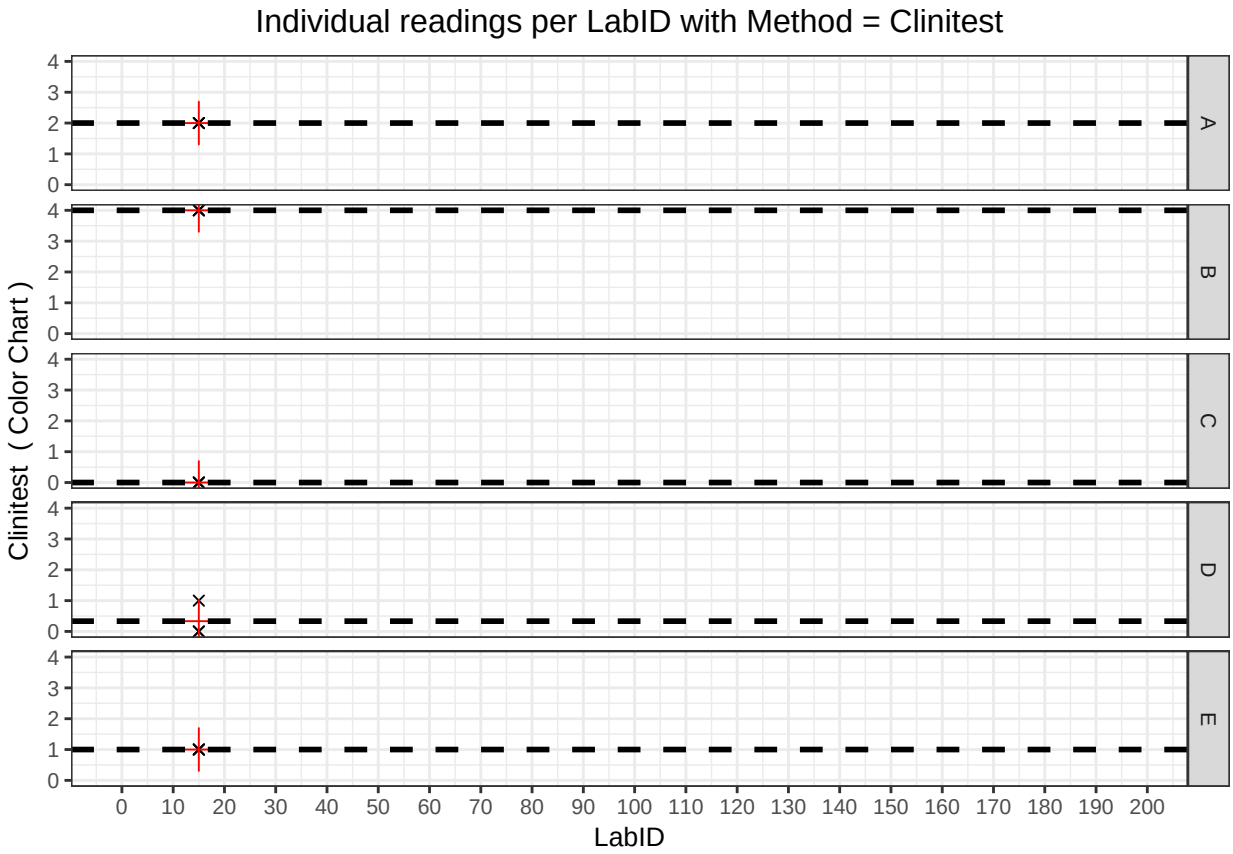
4

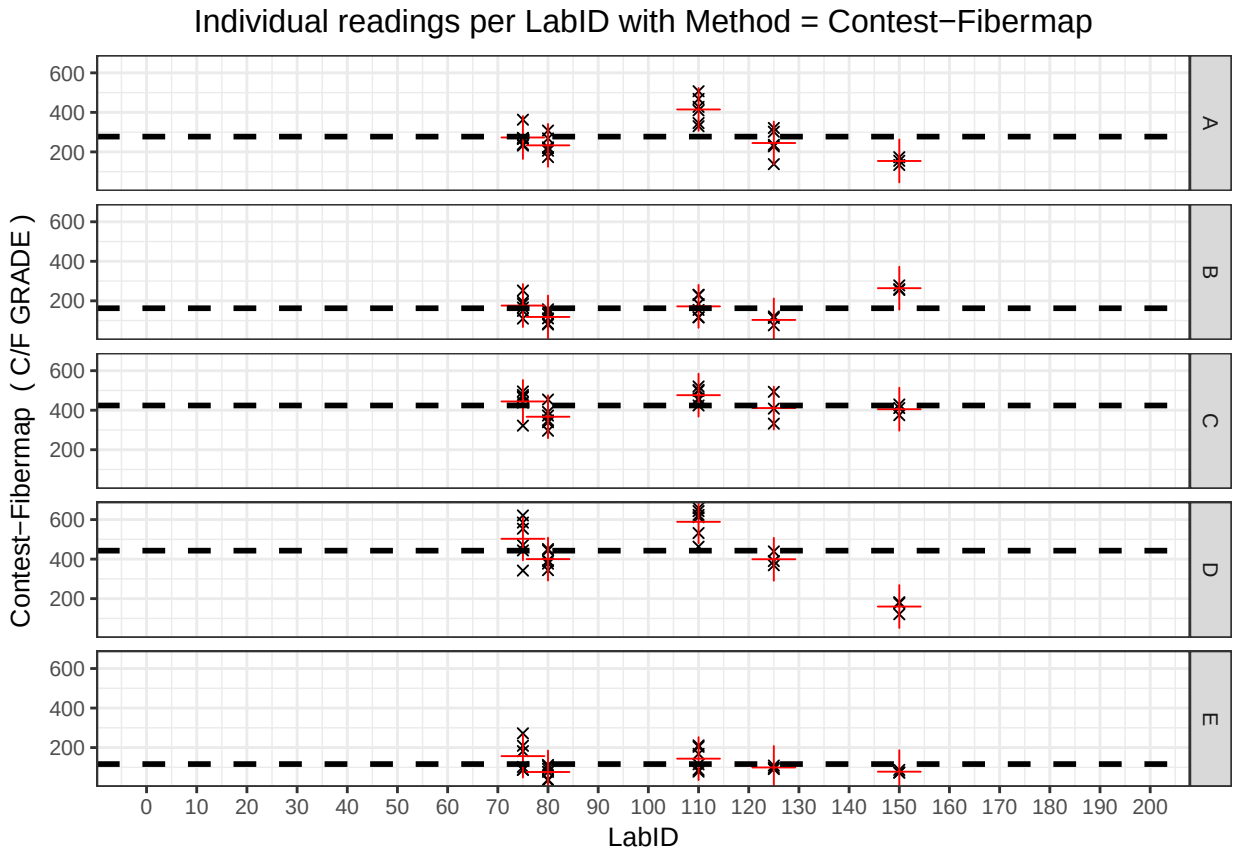


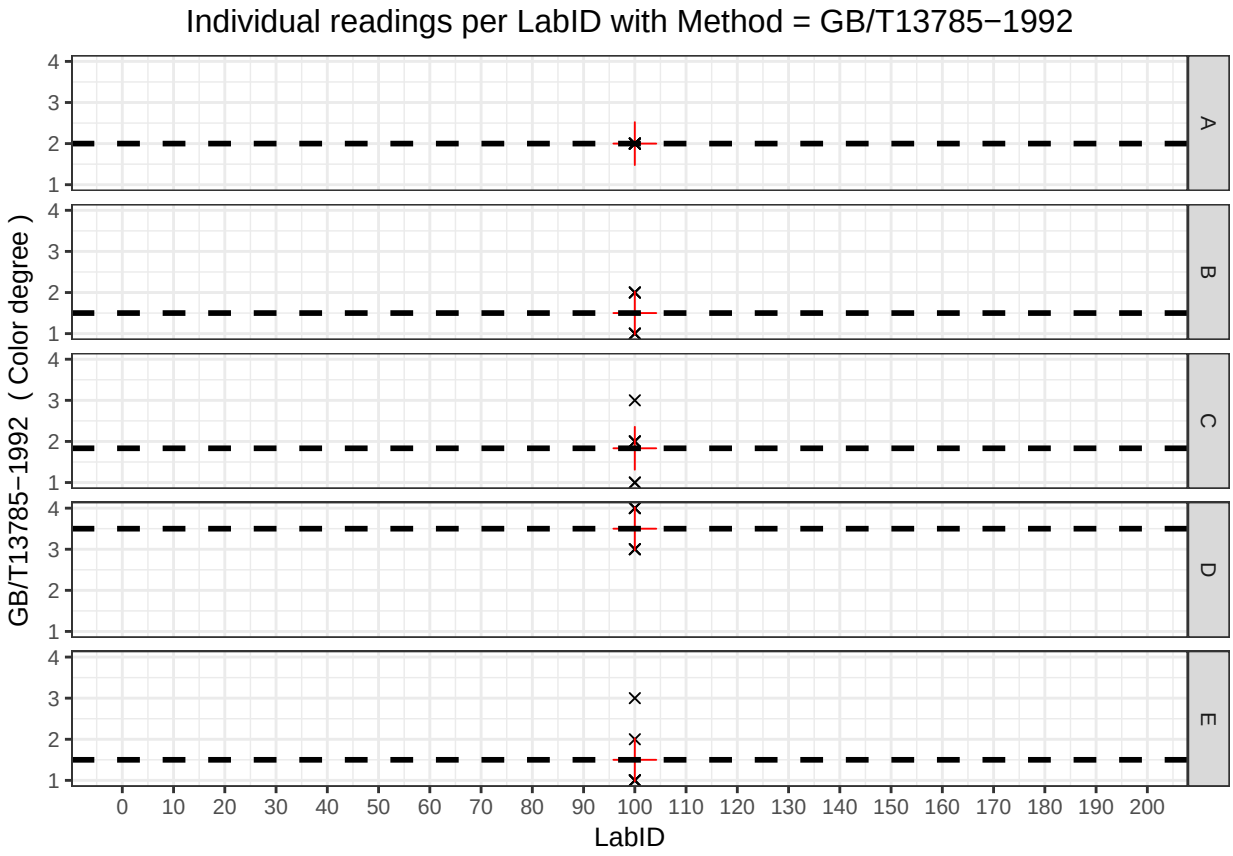
pdf 2

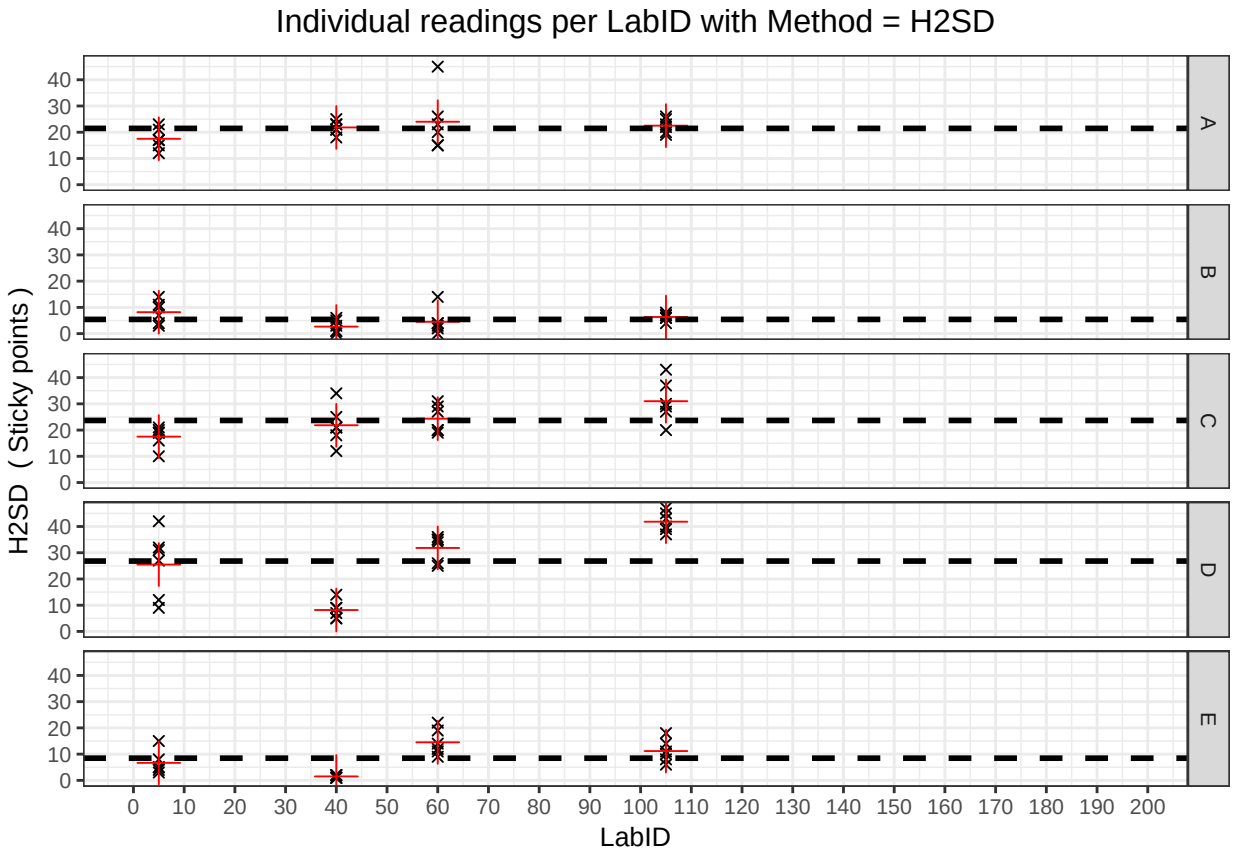
[4]Footnote

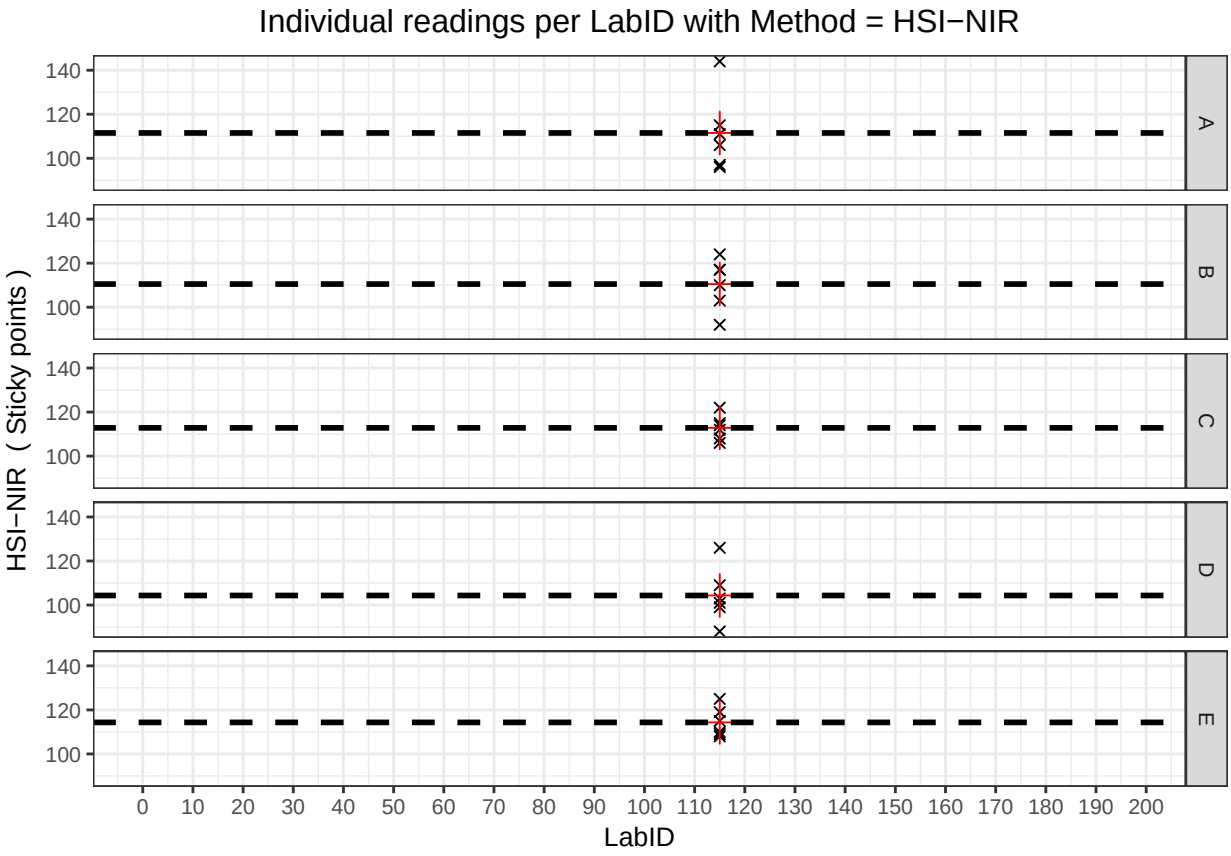
* NA excluded
* LabID are given in the abscissa axis at the bottom of the chart in the following charts.
* Black dashed line = Method GrandMean per cotton.
* Red + = Laboratory mean for the given method and for the given cotton.
* Black x = Laboratory individual reading for the given method and for the given cotton.

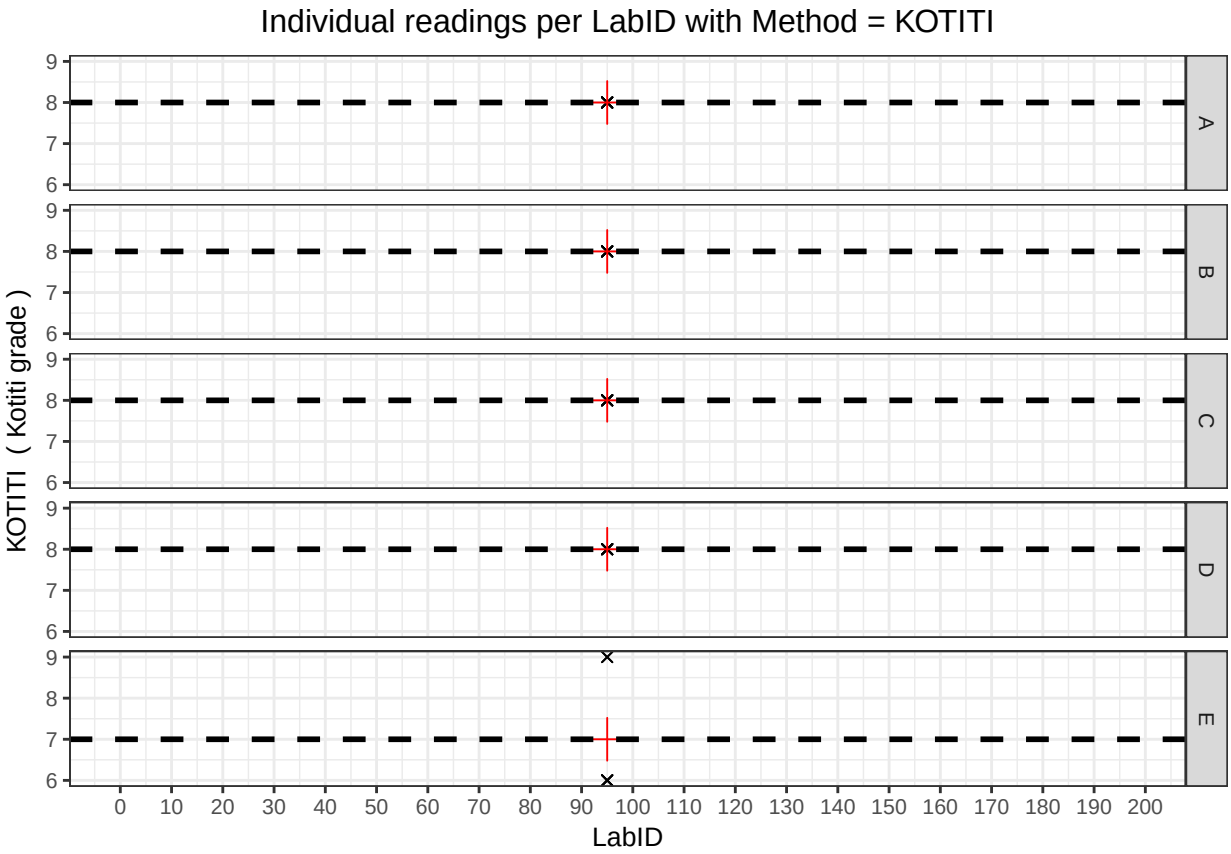

Individual readings per LabID with Method = Clinitest
Clinitest (Color Chart)
LabID
A
B
C
D
E
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

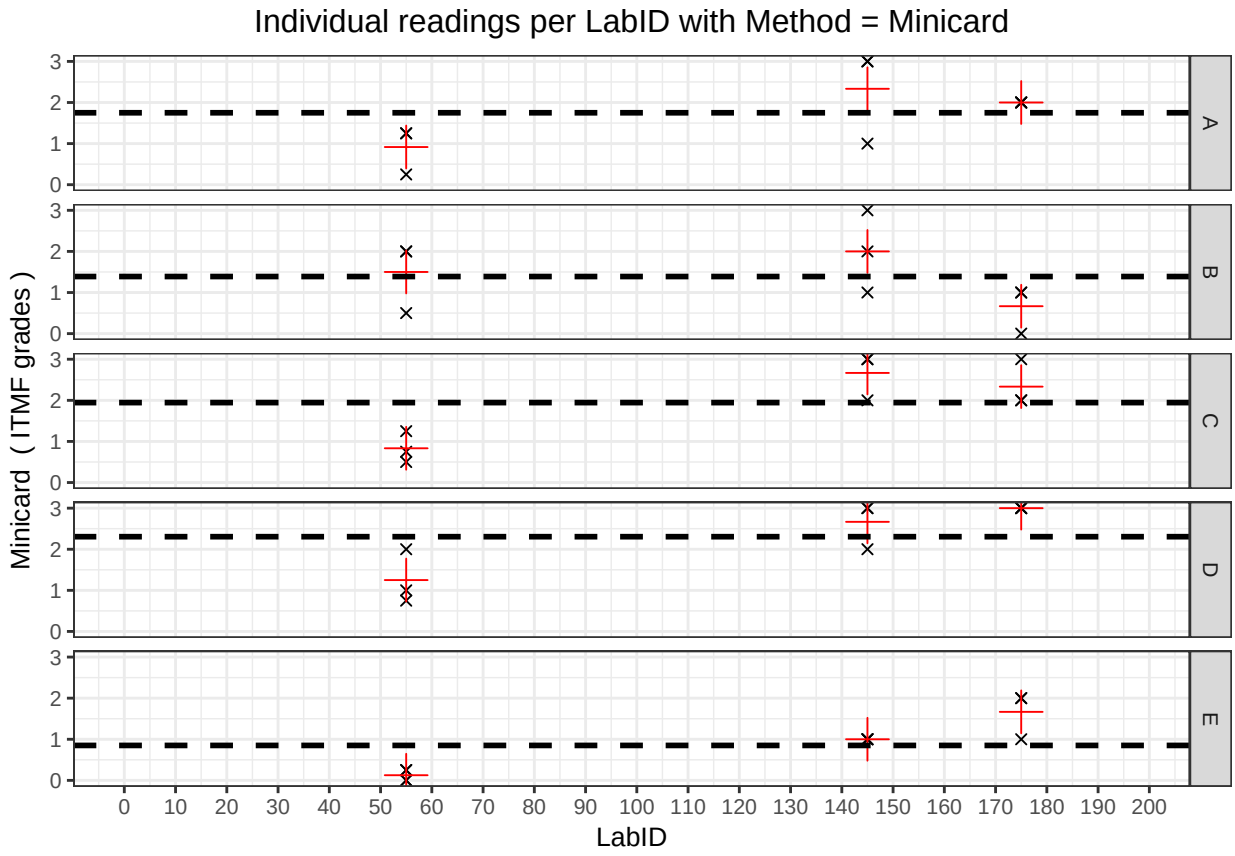

Individual readings per LabID with Method = Contest−Fibermap
Contest−Fibermap (C/F GRADE)
600
400
200
A
B
C
D
E
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
LabID

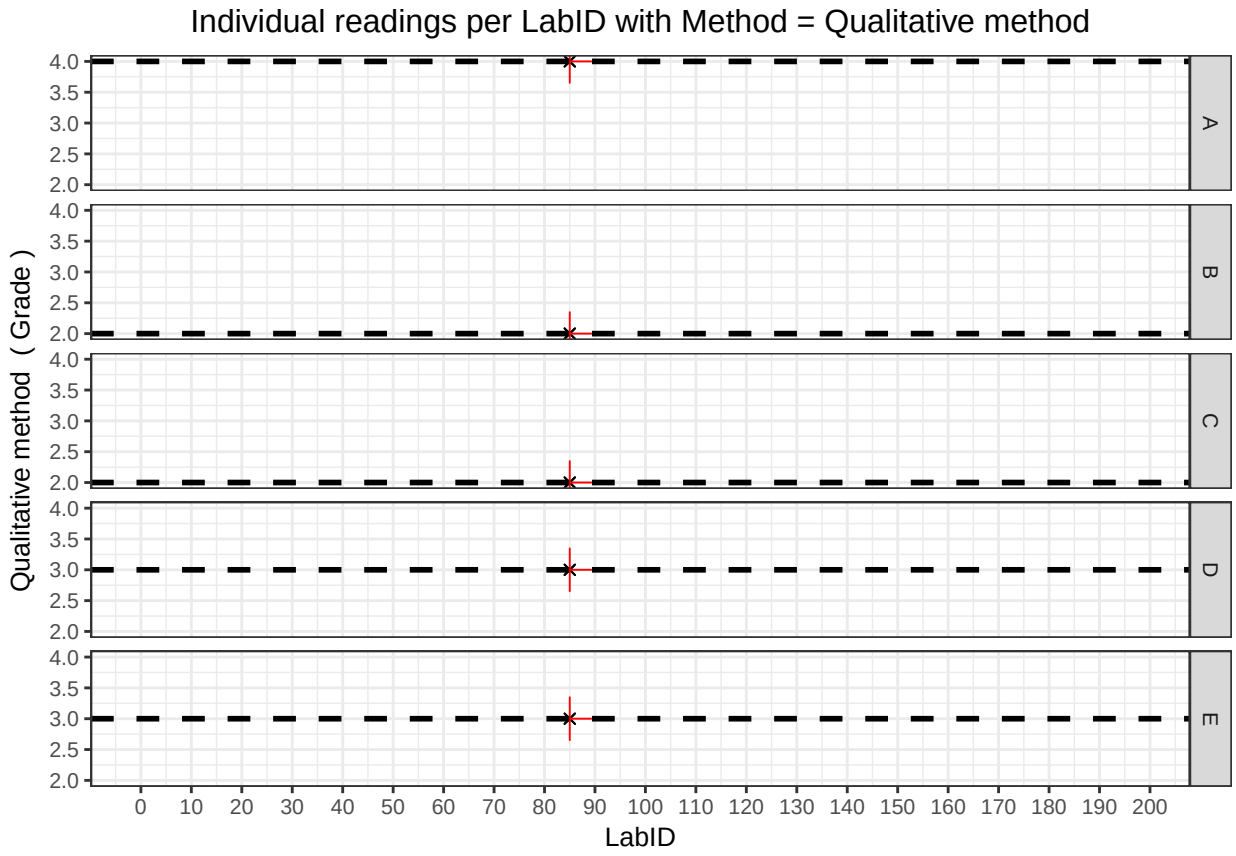

Individual readings per LabID with Method = GB/T13785−1992
GB/T13785−1992 (Color degree)
LabID
A
B
C
D
E
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
1 2 3 4

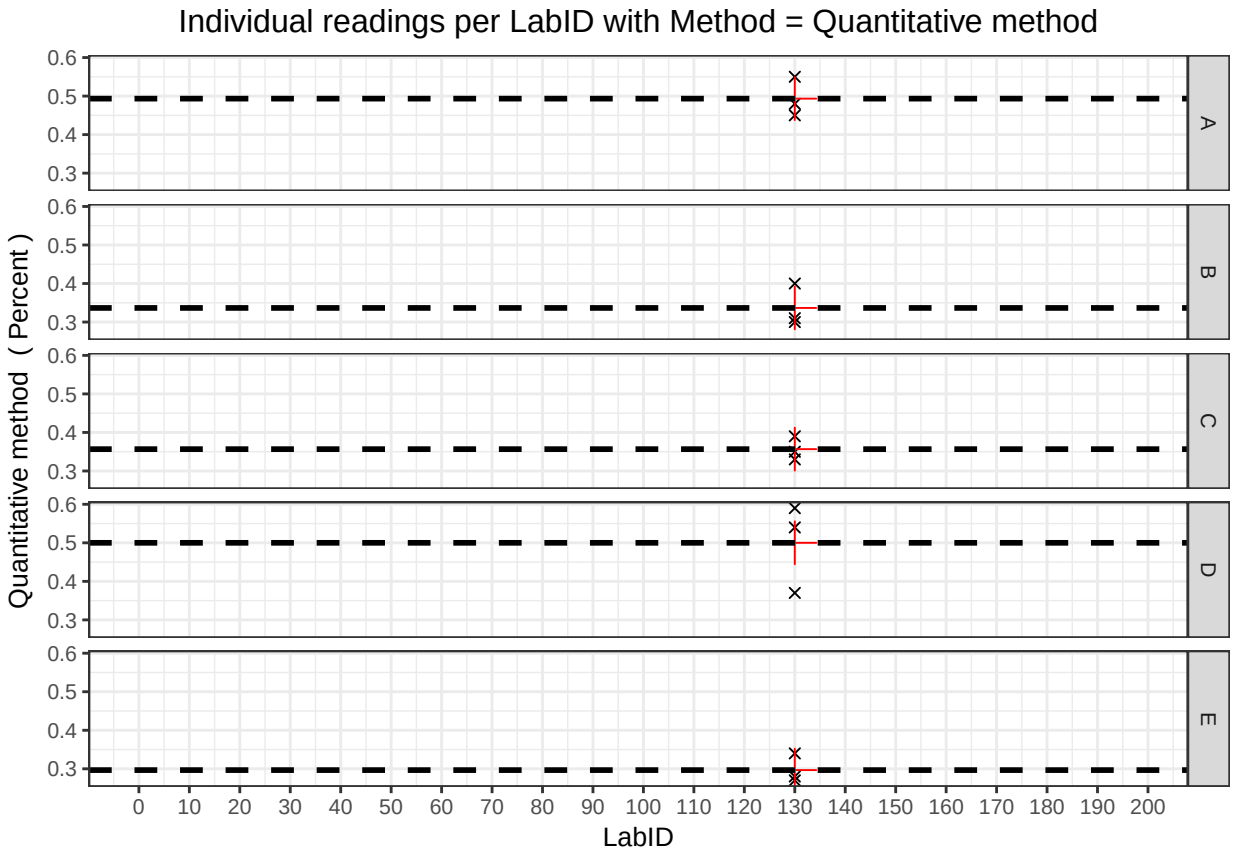

Individual readings per LabID with Method = H2SD
H2SD (Sticky points)
LabID
A
B
C
D
E
0 10 20 30 40
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

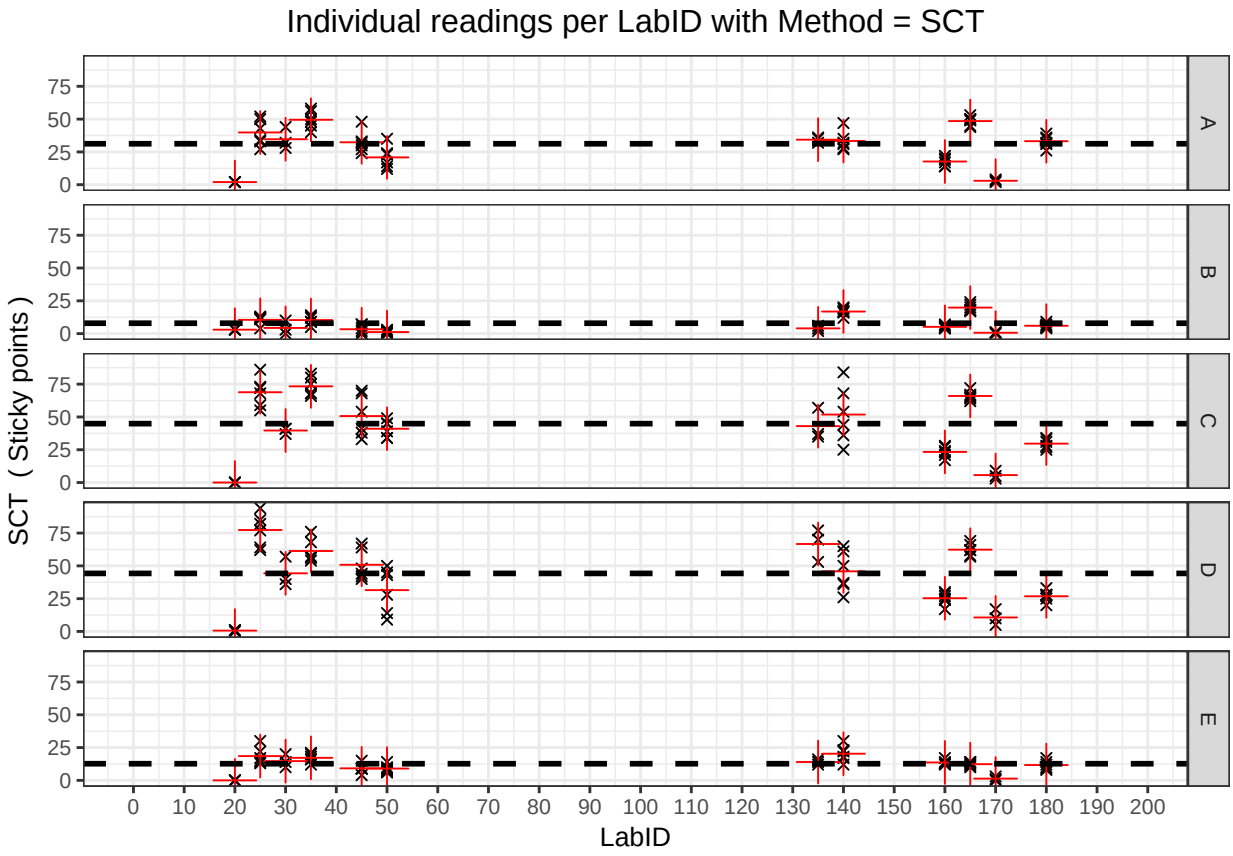

Individual readings per LabID with Method = HSI−NIR
HSI−NIR (Sticky points)
LabID
A
B
C
D
E
140
120
100
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200

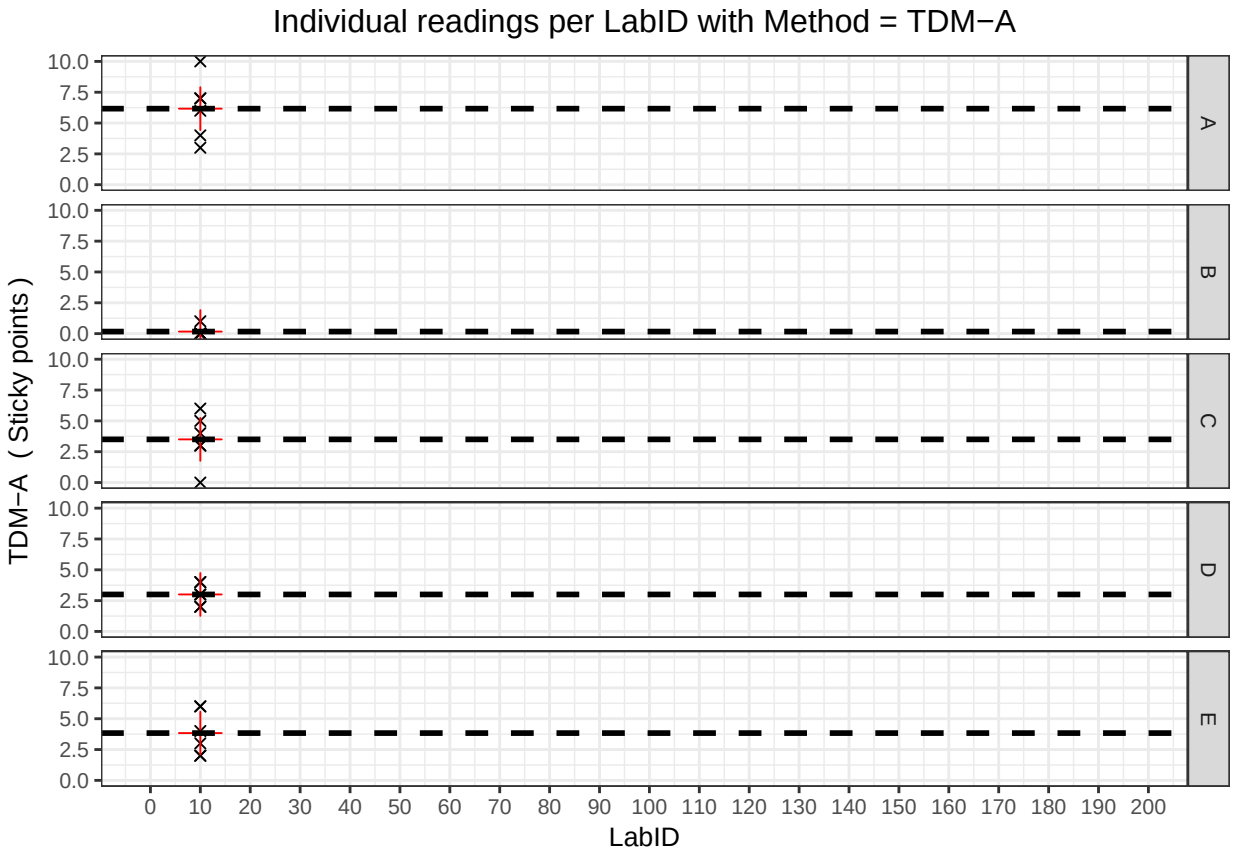

Individual readings per LabID with Method = KOTITI
KOTITI (Kotiti grade)
LabID
A
B
C
D
E
9
8
7
6
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200


Individual readings per LabID with Method = Minicard
Minicard (ITMF grades)
LabID
A
B
C
D
E
0
1
2
3
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

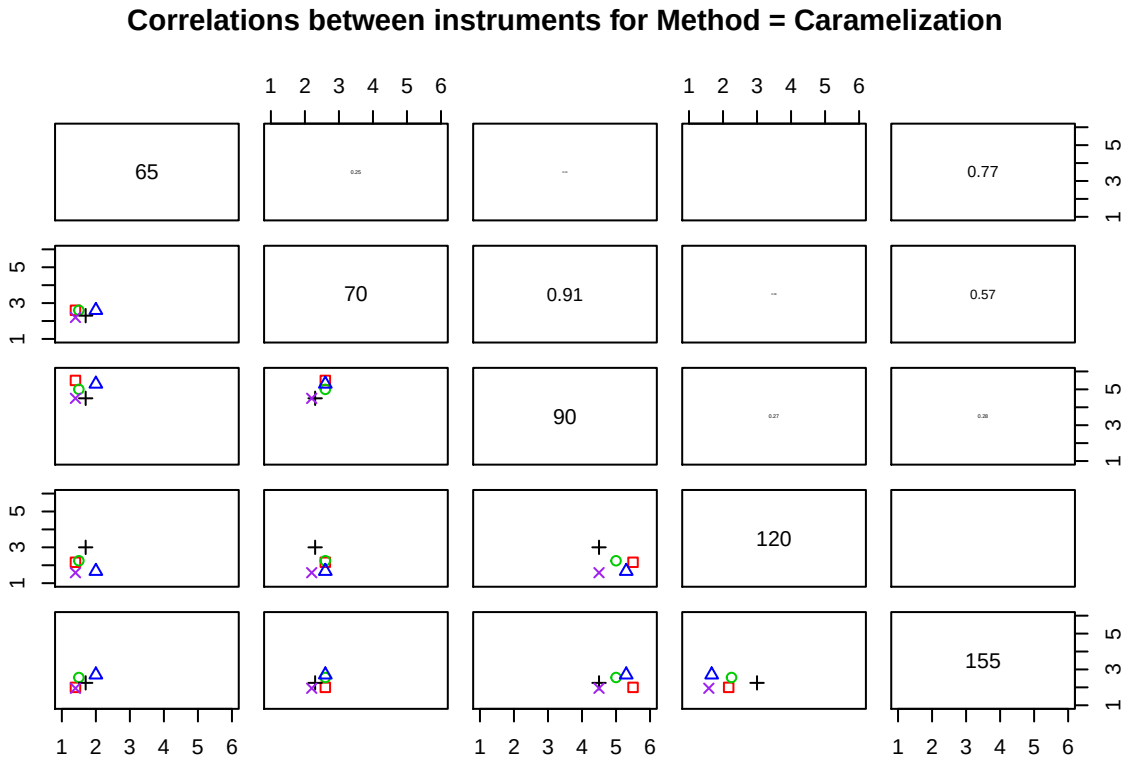

Individual readings per LabID with Method = Qualitative method
Qualitative method (Grade)
4.0
3.5
3.0
2.5
2.0
A
B
C
D
E
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
LabID


Individual readings per LabID with Method = Quantitative method
Quantitative method (Percent)
0.6
0.5
0.4
0.3
A
B
C
D
E
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
LabID


Individual readings per LabID with Method = SCT
SCT (Sticky points)
LabID
A
B
C
D
E
0
25
50
75
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

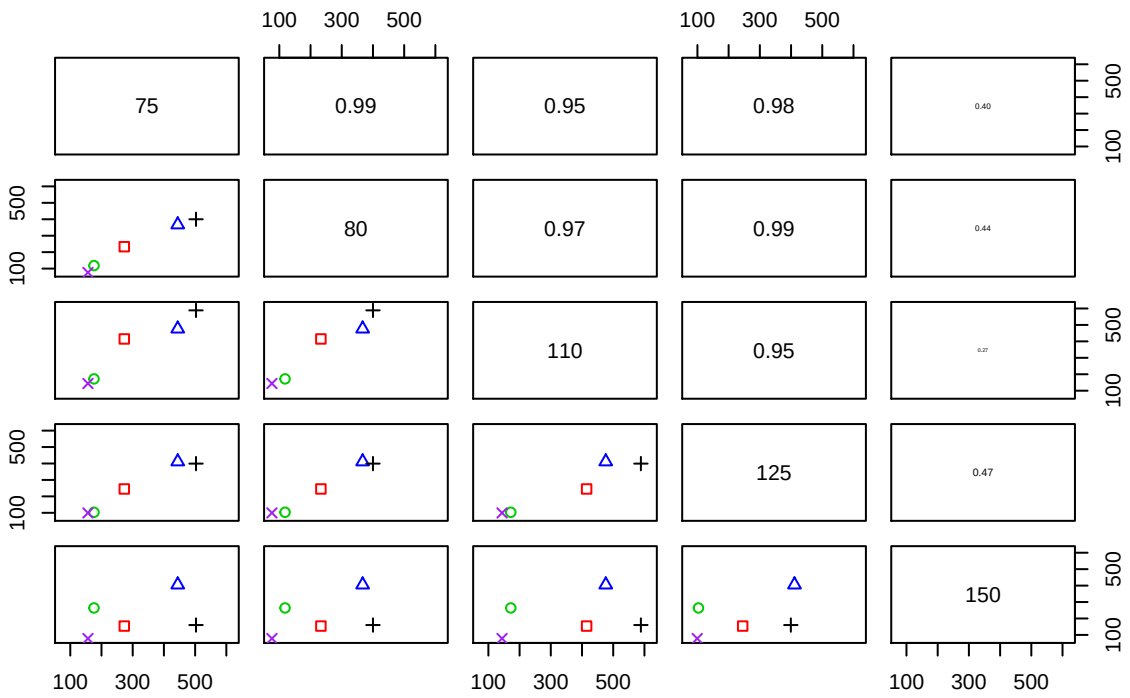

Individual readings per LabID with Method = TDM−A
TDM−A (Sticky points)
LabID
A
B
C
D
E
10.0
7.5
5.0
2.5
0.0
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200

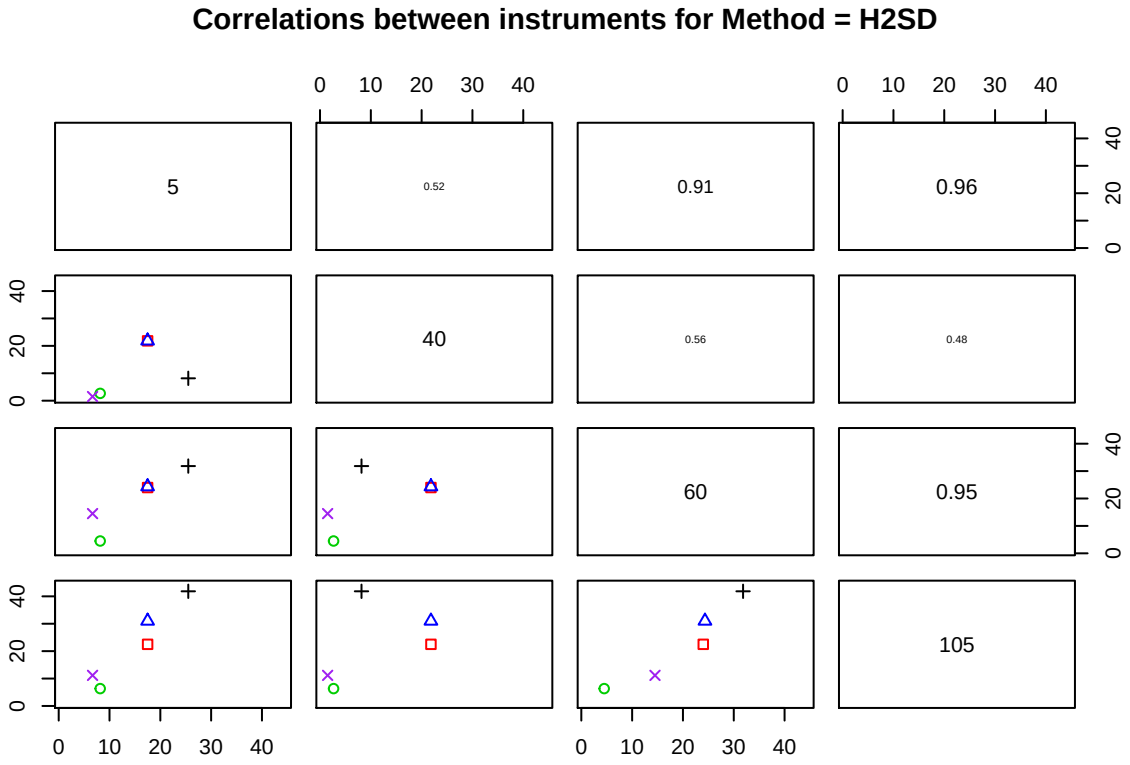
Correlation charts and correlation values between LabID using a same Method for all cottons [5]

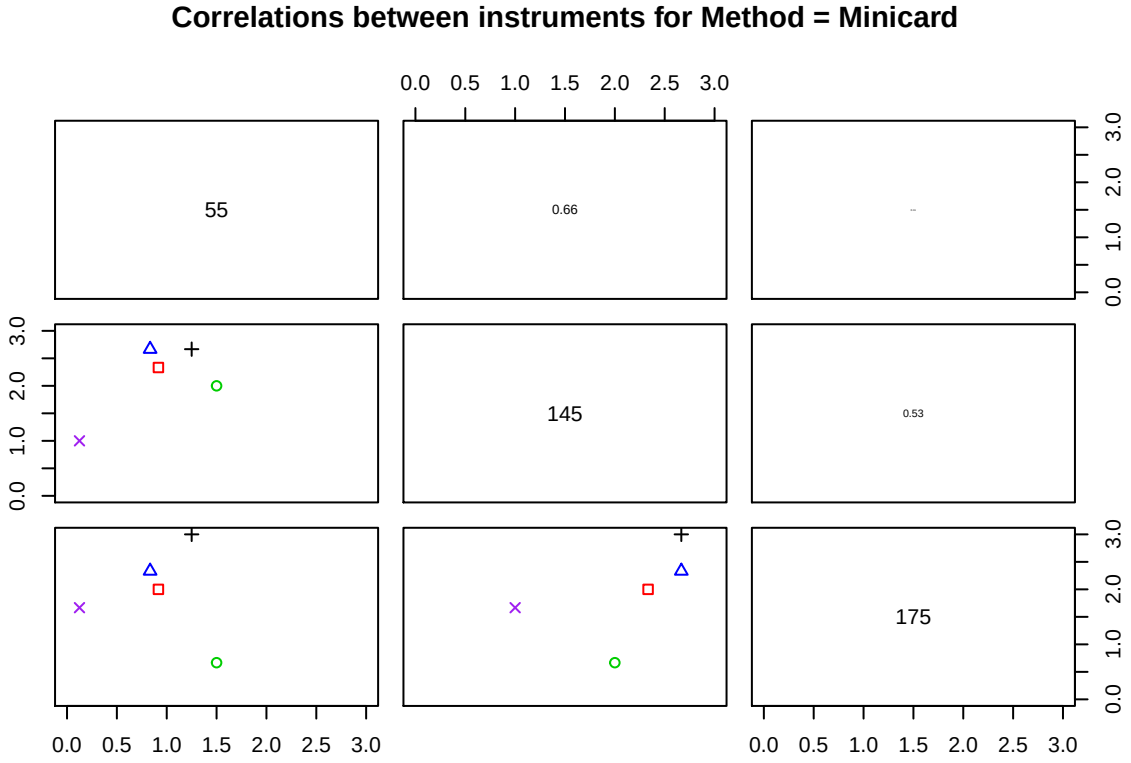


[5]Footnote

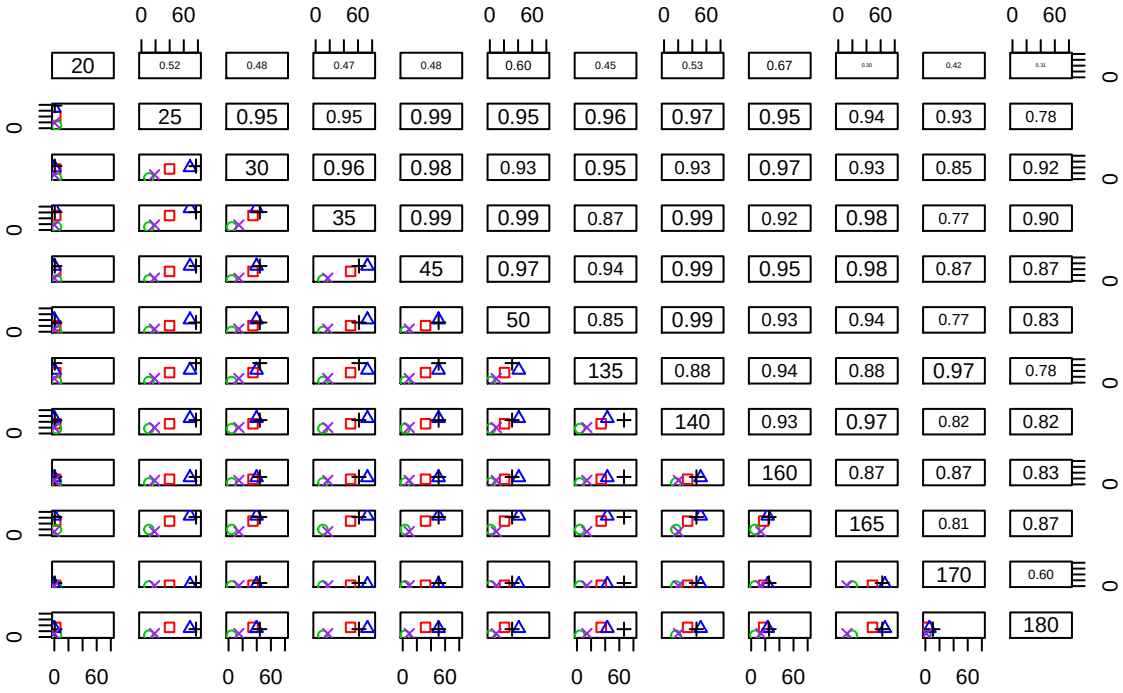
* A correlation matrix of charts is provided only when two or more instruments were used for a given method.
* Based on Means of available results (NA excluded)
* LabIds are given in the diagonal of the matrix.
* Squares in red for Cotton A, rounds in green for Cotton B, triangles in blue for Cotton C, + in black for cotton D, and x in purple for cotton E.
* The lower left corner of the matrix provides the correlation charts, while the upper right corner of the matrix provides the corresponding raw correlation coefficients. Higher the correlation coefficient, larger the font size of the corresponding text.


Correlations between instruments for Method = Contest−Fibermap
75
0.99
0.95
0.98
0.40
80
0.97
0.99
0.44
110
0.95
0.27
125
0.47
150
100
300
500


Correlations between instruments for Method = H2SD
5
0.52
0.91
0.96
40
0.56
0.48
60
0.95
105
0
10
20
30
40


Correlations between instruments for Method = Minicard
55
0.66
145
0.53
175
0.0 0.5 1.0 1.5 2.0 2.5 3.0

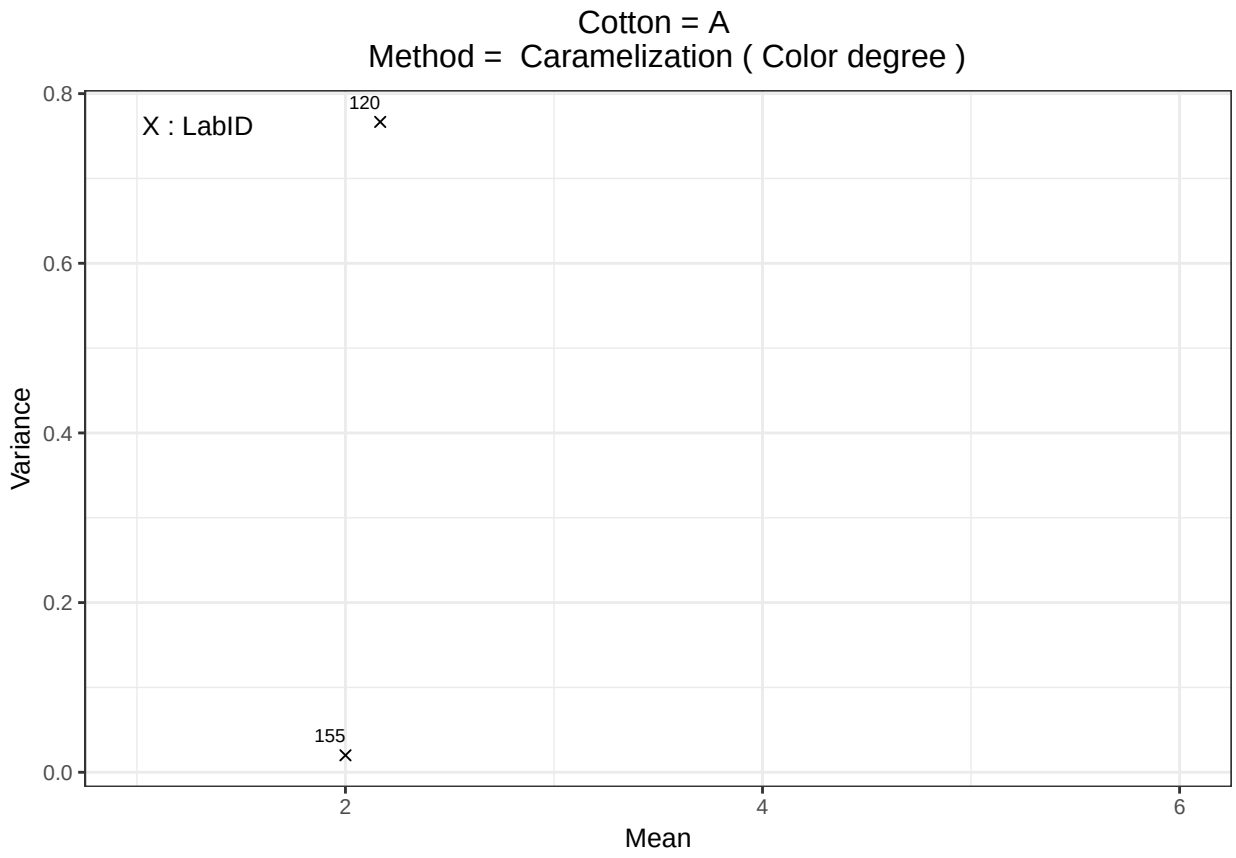
Correlations between instruments for Method = SCT

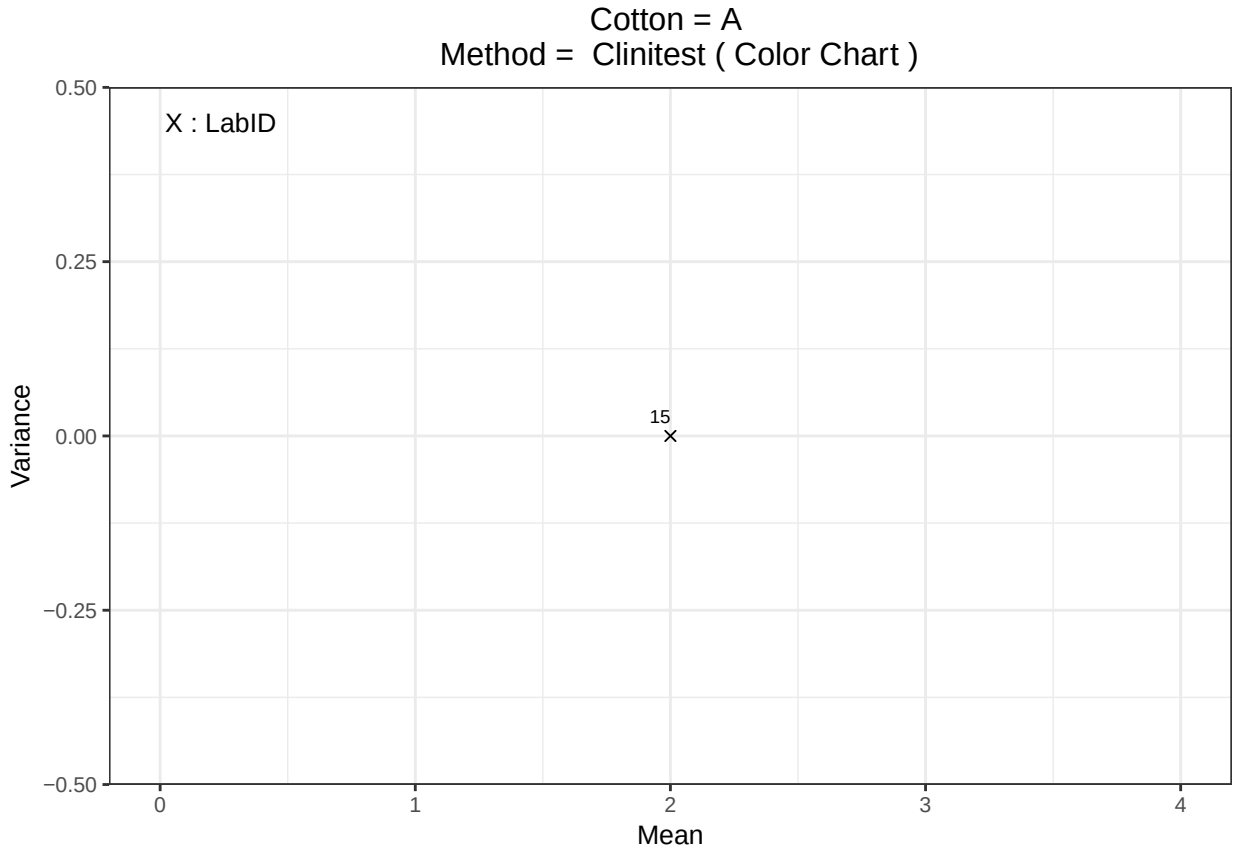


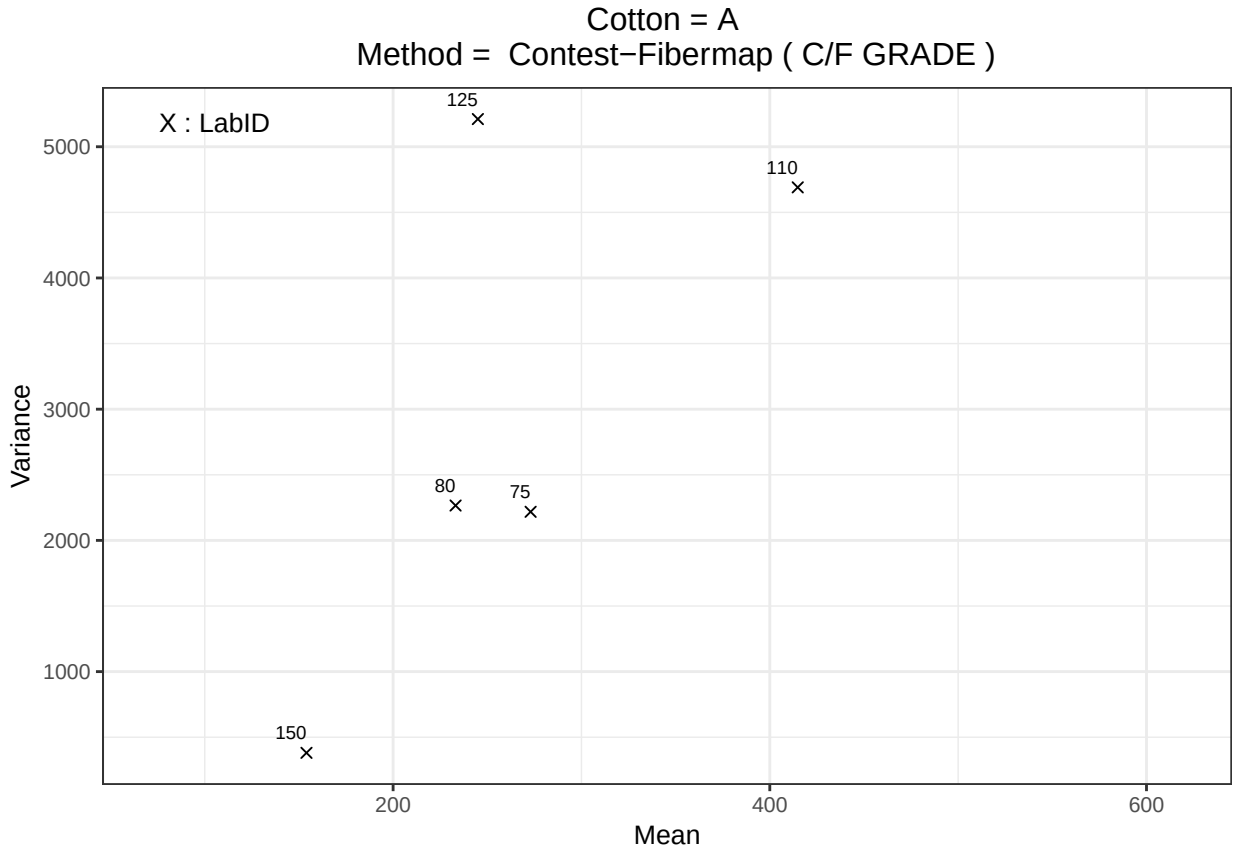
Charts Variance = f(Mean) for each Cotton and Method, taking care of LabIDs

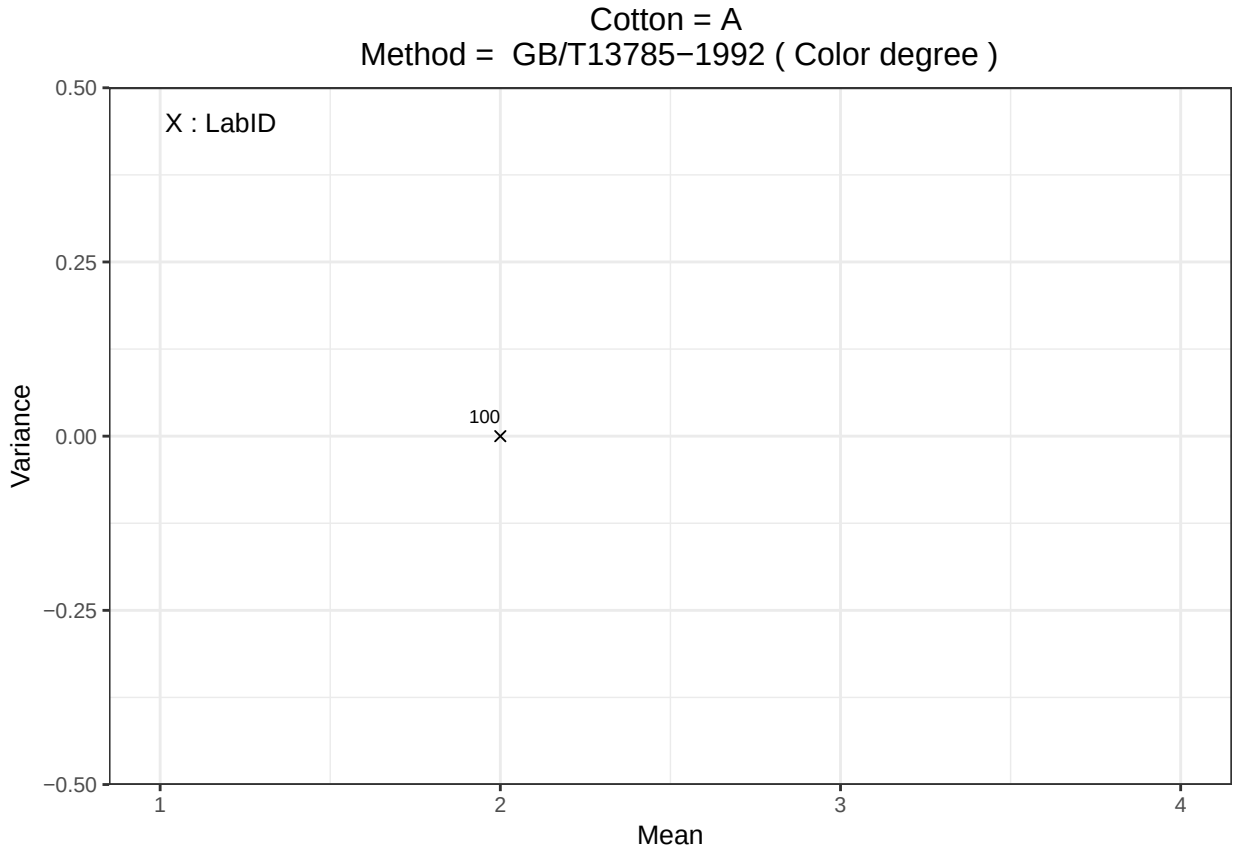
This type of chart is devoted to displaying the ability of laboratories to reproduce themselves for each cotton, based on the six readings they provided for each cotton sample. Stickiness has the reputation to be heterogeneously distributed within samples (whatever the efforts we made for homogenizing cotton masses before dispatching representative samples); therefore, if methods are sensitive enough, then a certain level of variance (displayed on the vertical axis in the following charts) is to be seen when the number of measurements exceeds 1 in this test.

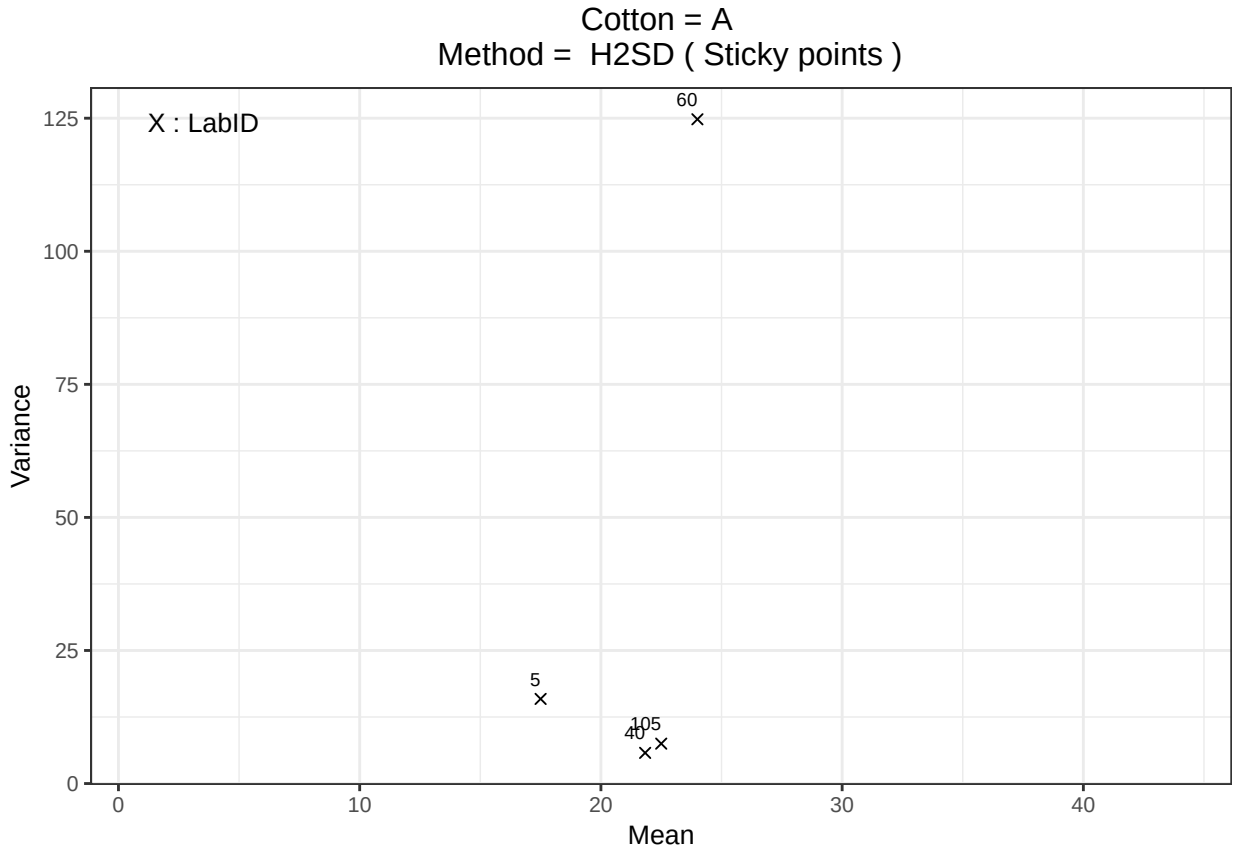
Cotton A : Variance between individual measurements = f(Mean) for all concerned labs

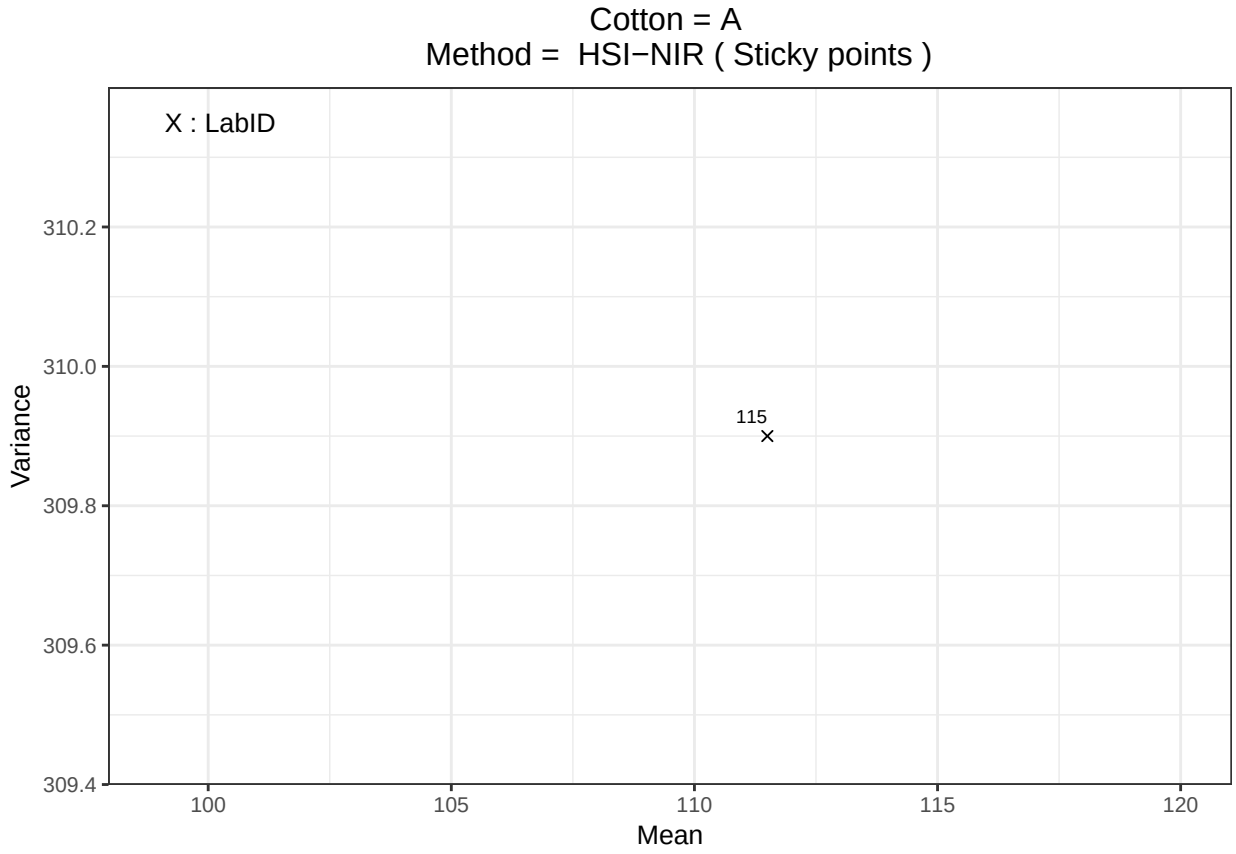


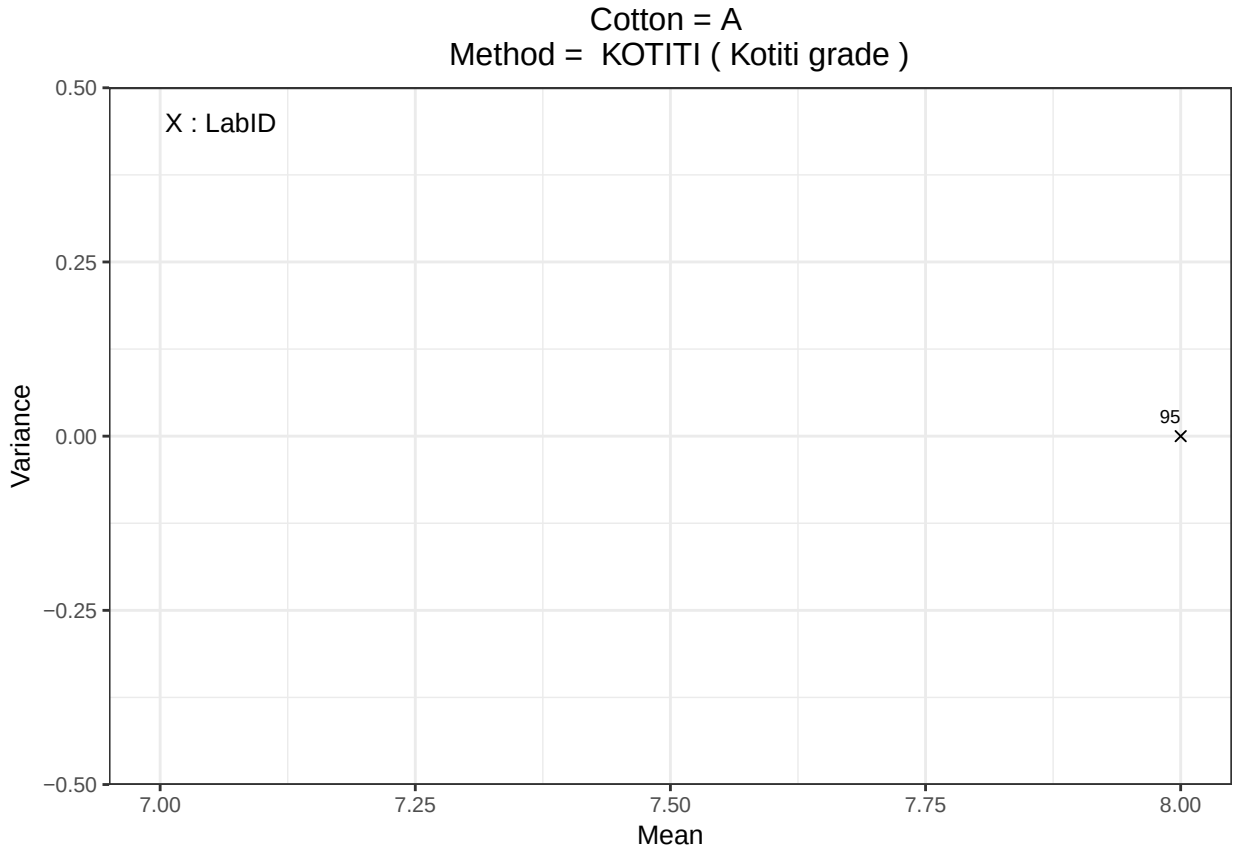

Cotton = A
Method = Clinitest (Color Chart)
X : LabID
15
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
0
1
2
3
4

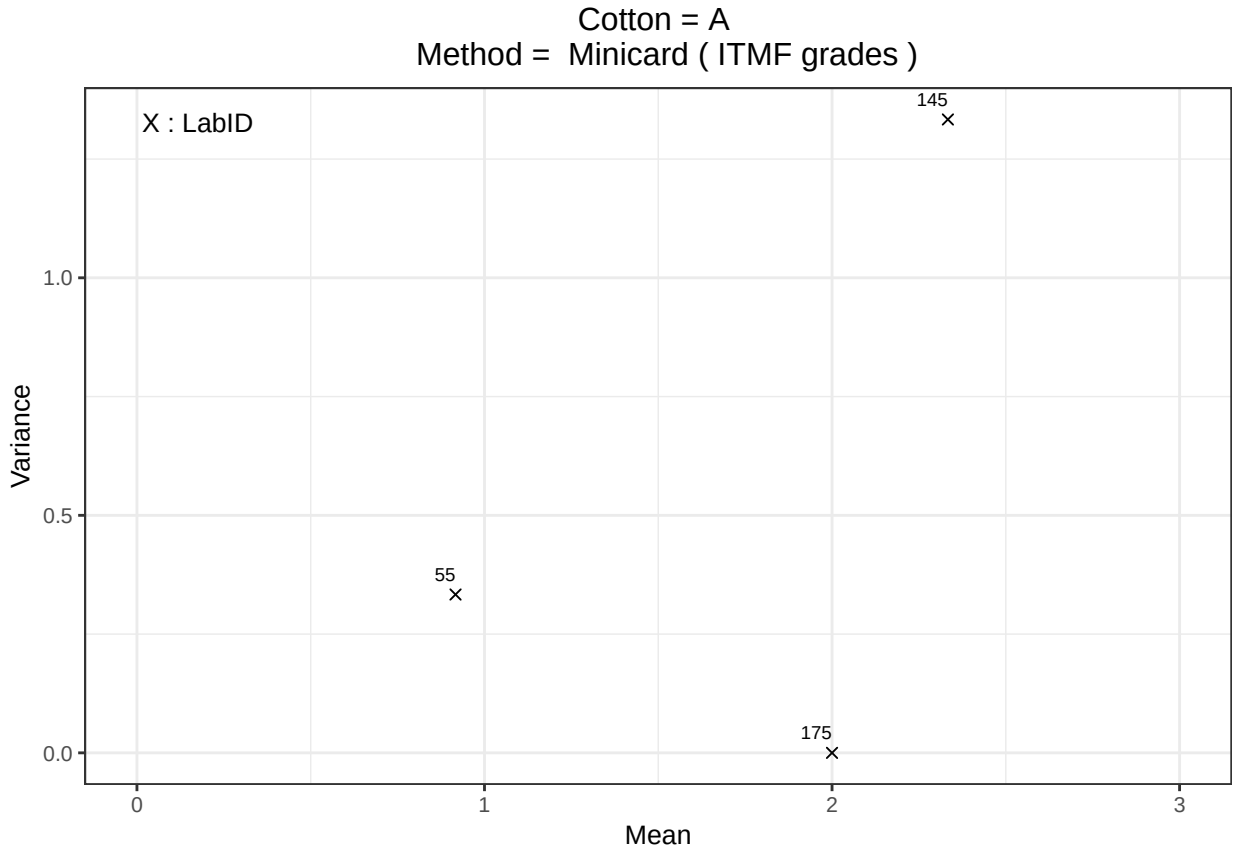

Cotton = A
Method = Contest−Fibermap (C/F GRADE)
X : LabID
125
110
80
75
150
5000
4000
3000
2000
1000
Variance
200
400
600
Mean

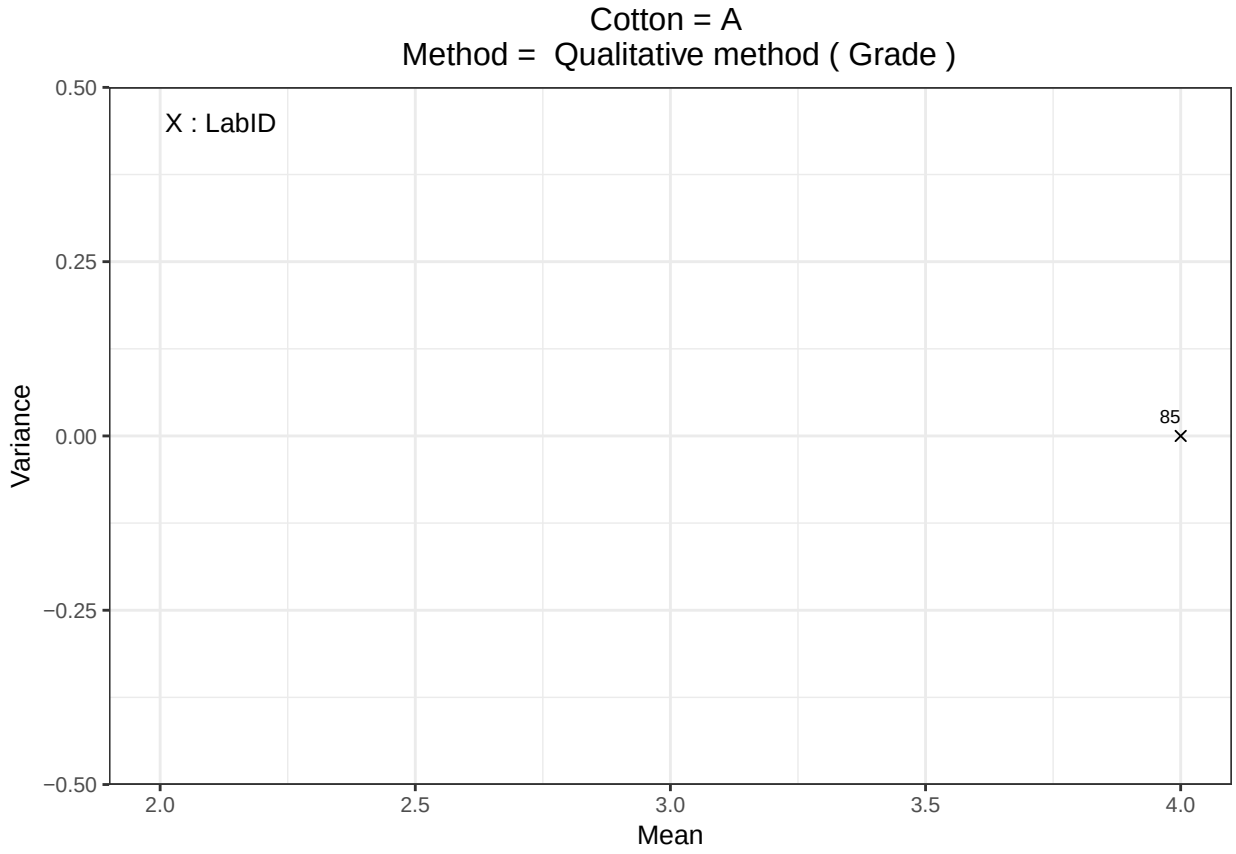

Cotton = A
Method = GB/T13785−1992 (Color degree)
X : LabID
100
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
1
2
3
4

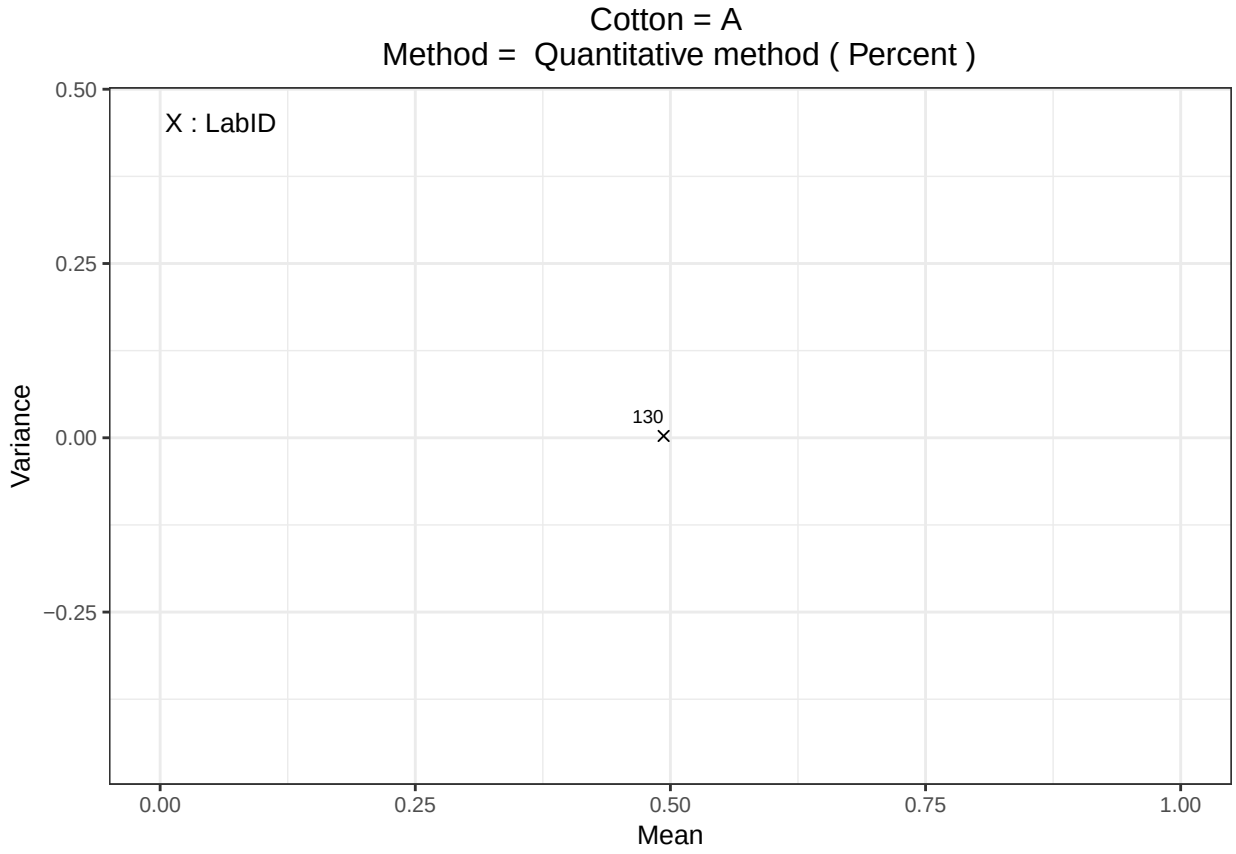

Cotton = A
Method = H2SD (Sticky points)
X : LabID
60
5
105
40
Variance
Mean
125
100
75
50
25
0
0
10
20
30
40

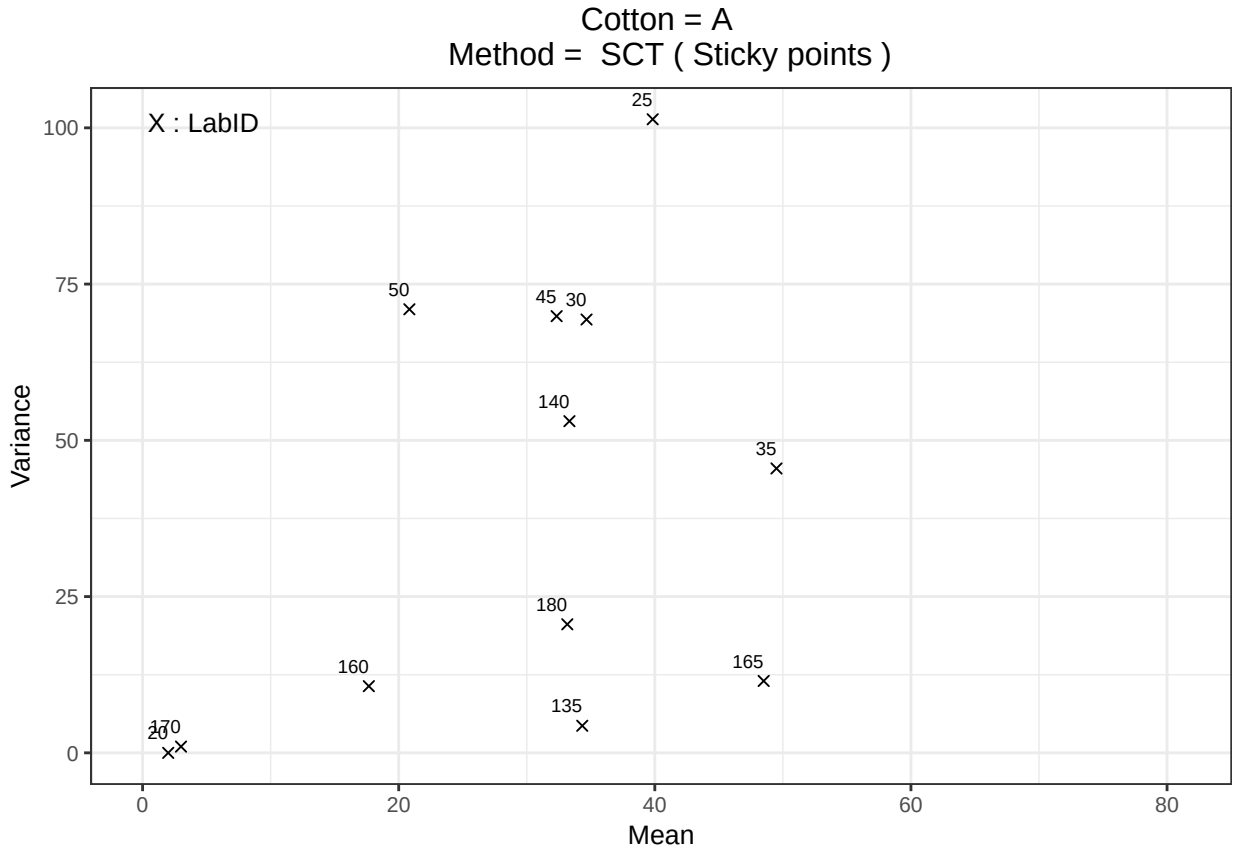

Cotton = A
Method = HSI−NIR (Sticky points)
X : LabID
310.2
310.0
309.8
309.6
309.4
Variance
115
100
105
110
115
120
Mean

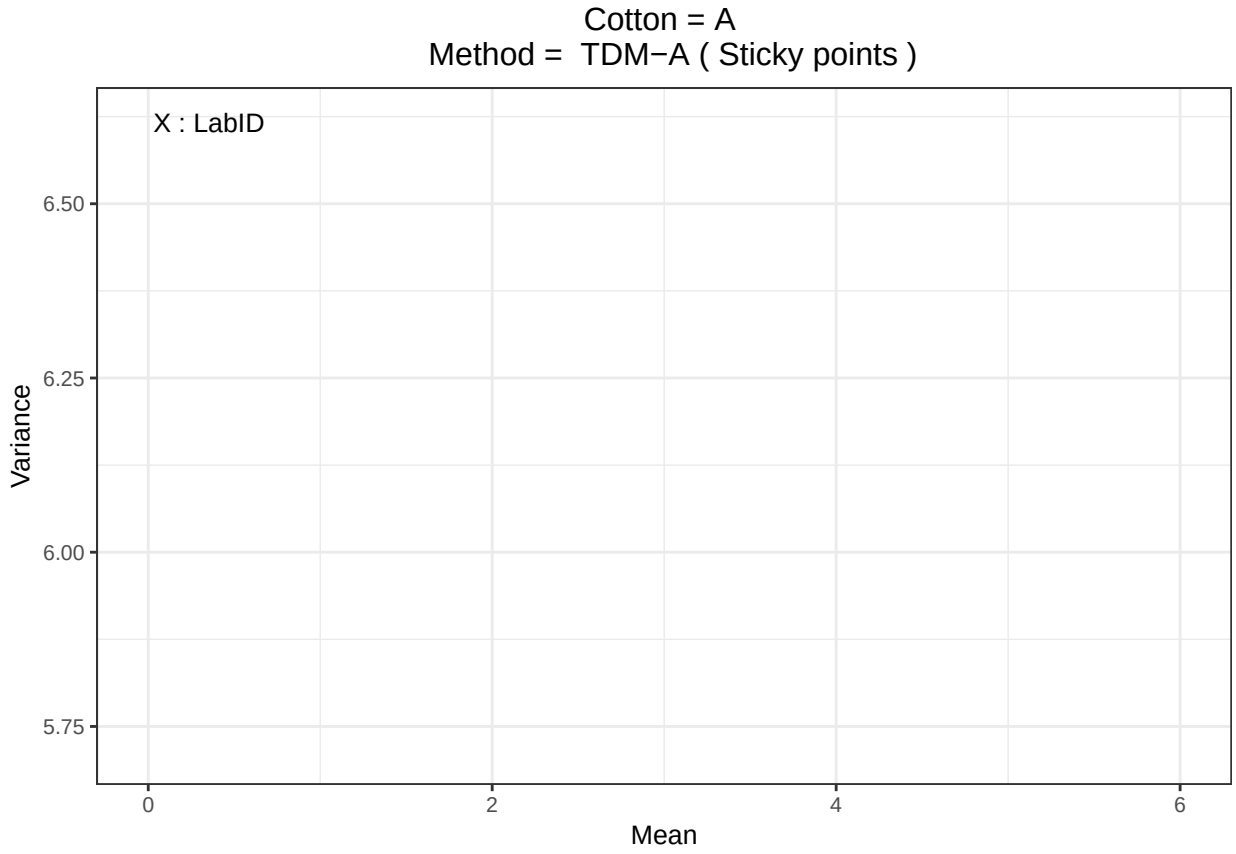

Cotton = A
Method = KOTITI (Kotiti grade)
X : LabID
95
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
7.00
7.25
7.50
7.75
8.00


Cotton = A
Method = Minicard (ITMF grades)
X : LabID
145
55
175
Variance
Mean
0.0
0.5
1.0
0
1
2
3

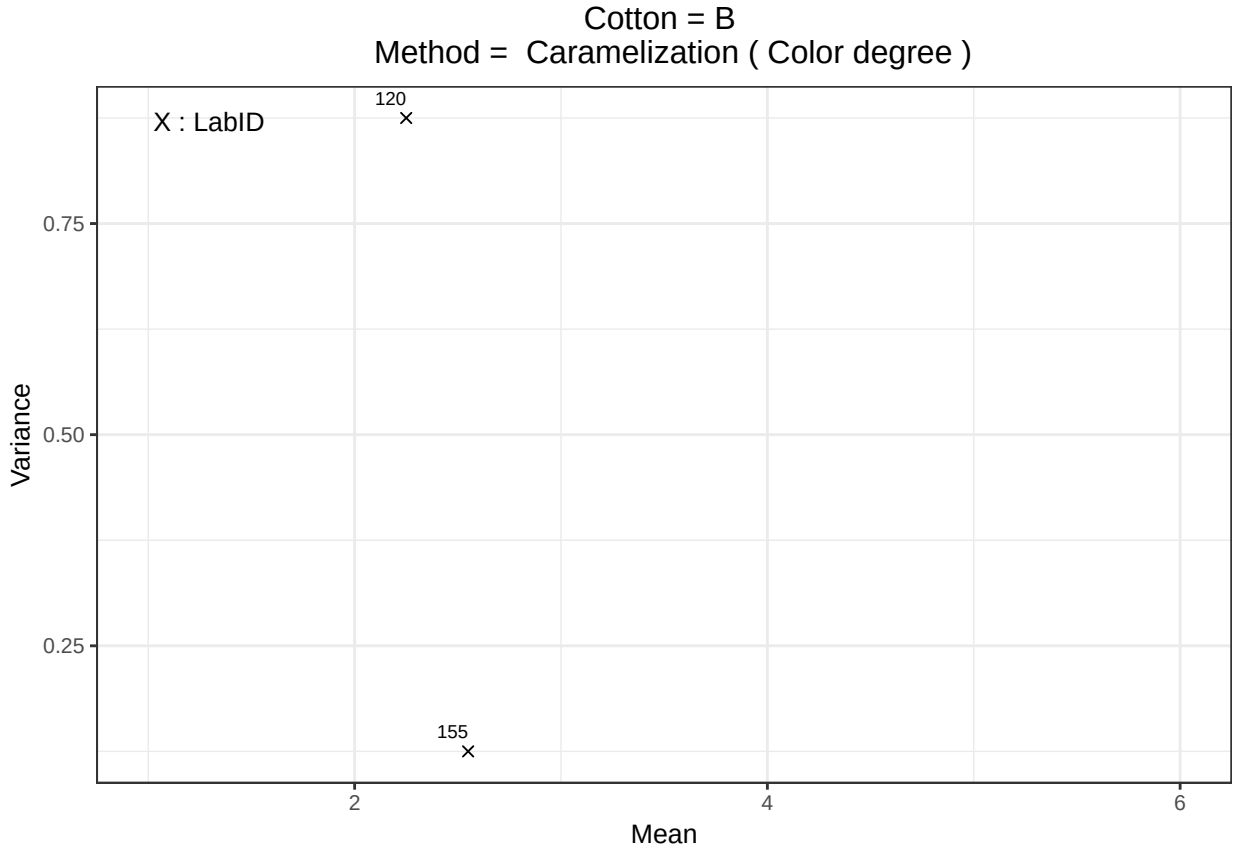

Cotton = A
Method = Qualitative method (Grade)
X : LabID
85
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
2.0
2.5
3.0
3.5
4.0

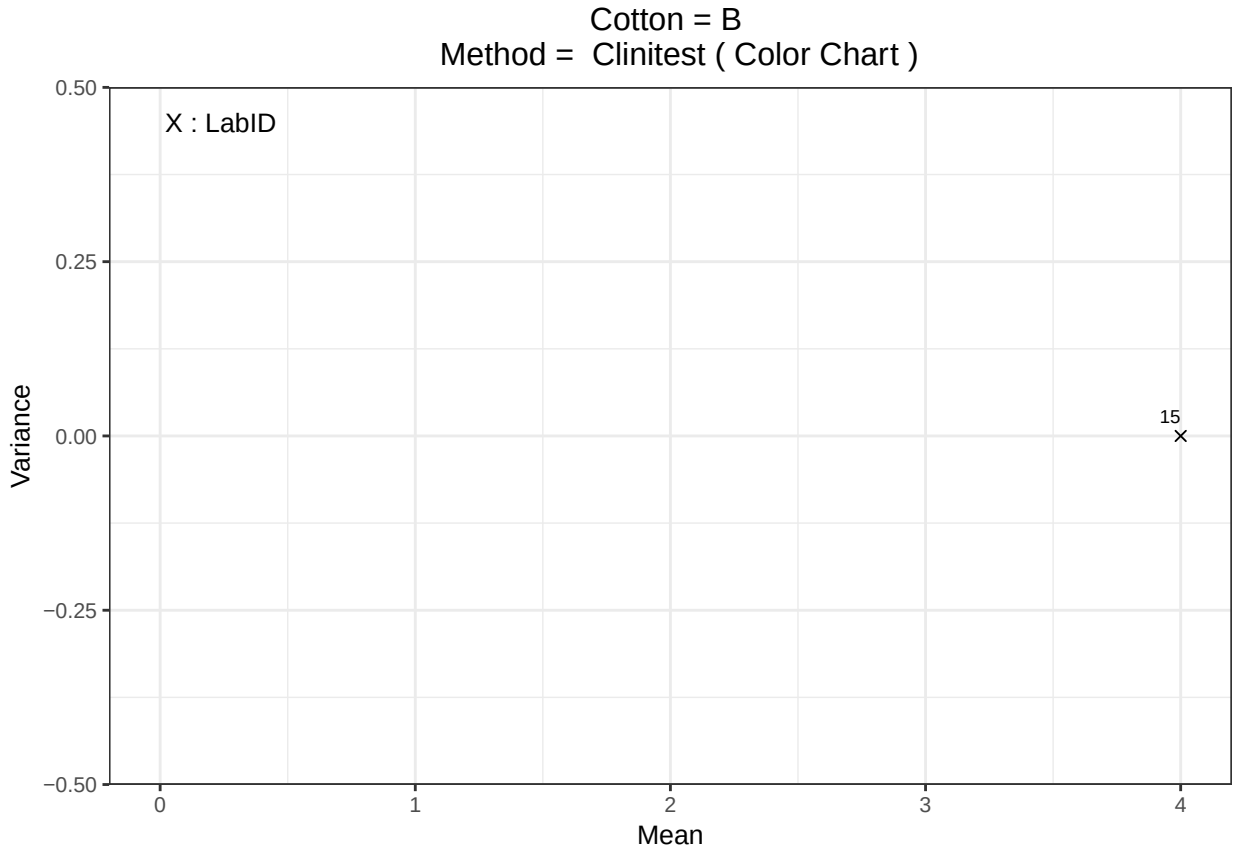

Cotton = A
Method = Quantitative method (Percent)
X : LabID
130
Variance
Mean
0.50
0.25
0.00
−0.25
0.00
0.25
0.50
0.75
1.00

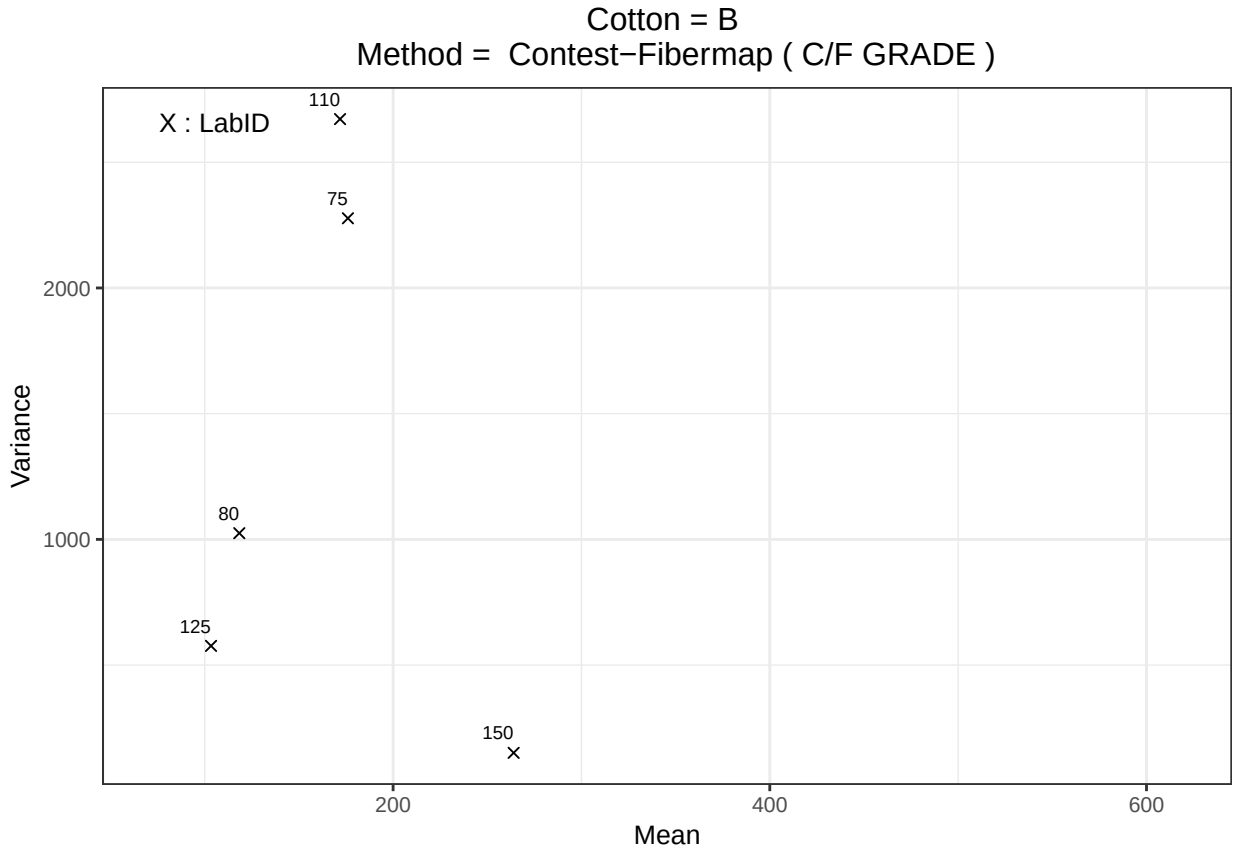

Cotton = A
Method = SCT (Sticky points)
X : LabID
Variance
Mean
100
75
50
25
0
0
20
40
60
80
25
50
45
30
140
35
180
160
165
135
170
20

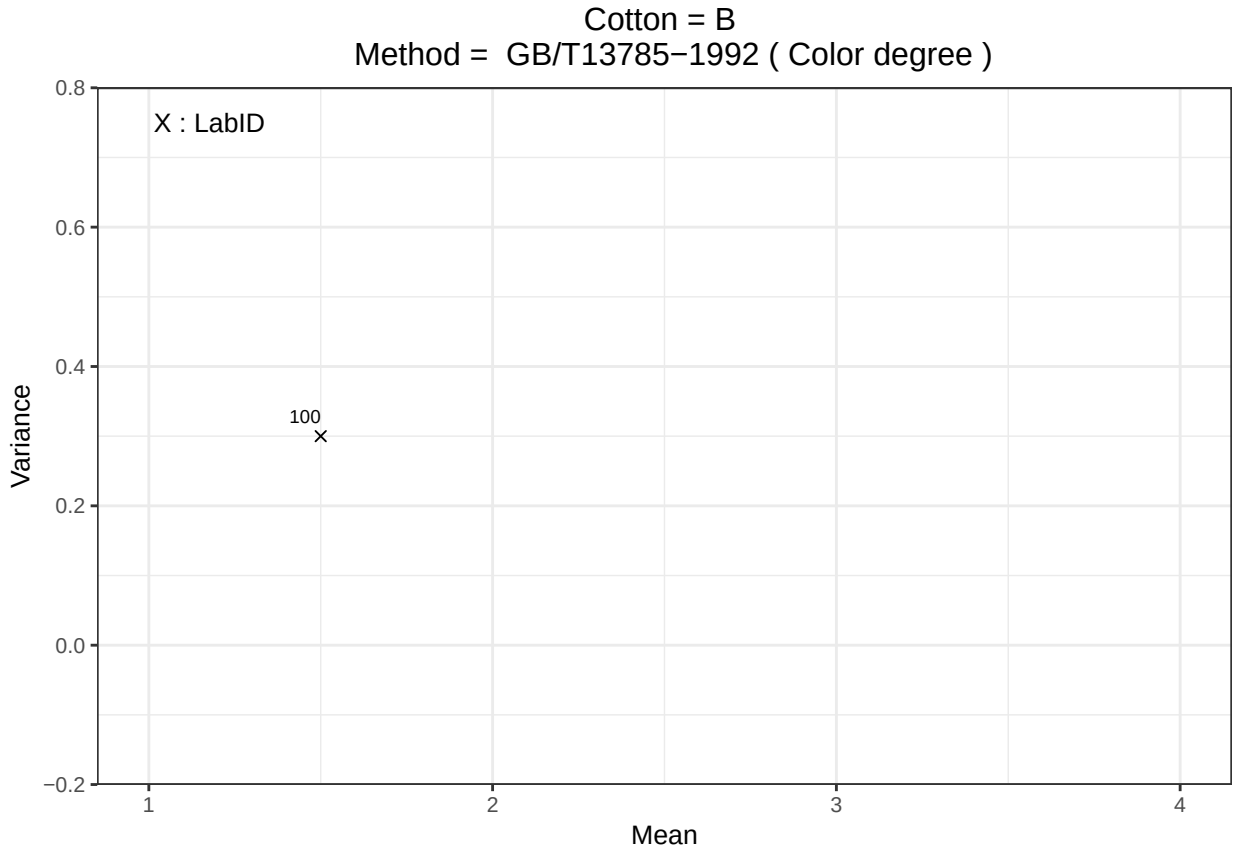

Cotton = A
Method = TDM−A (Sticky points)
X : LabID
6.50
6.25
6.00
5.75
Variance
0
2
4
6
Mean

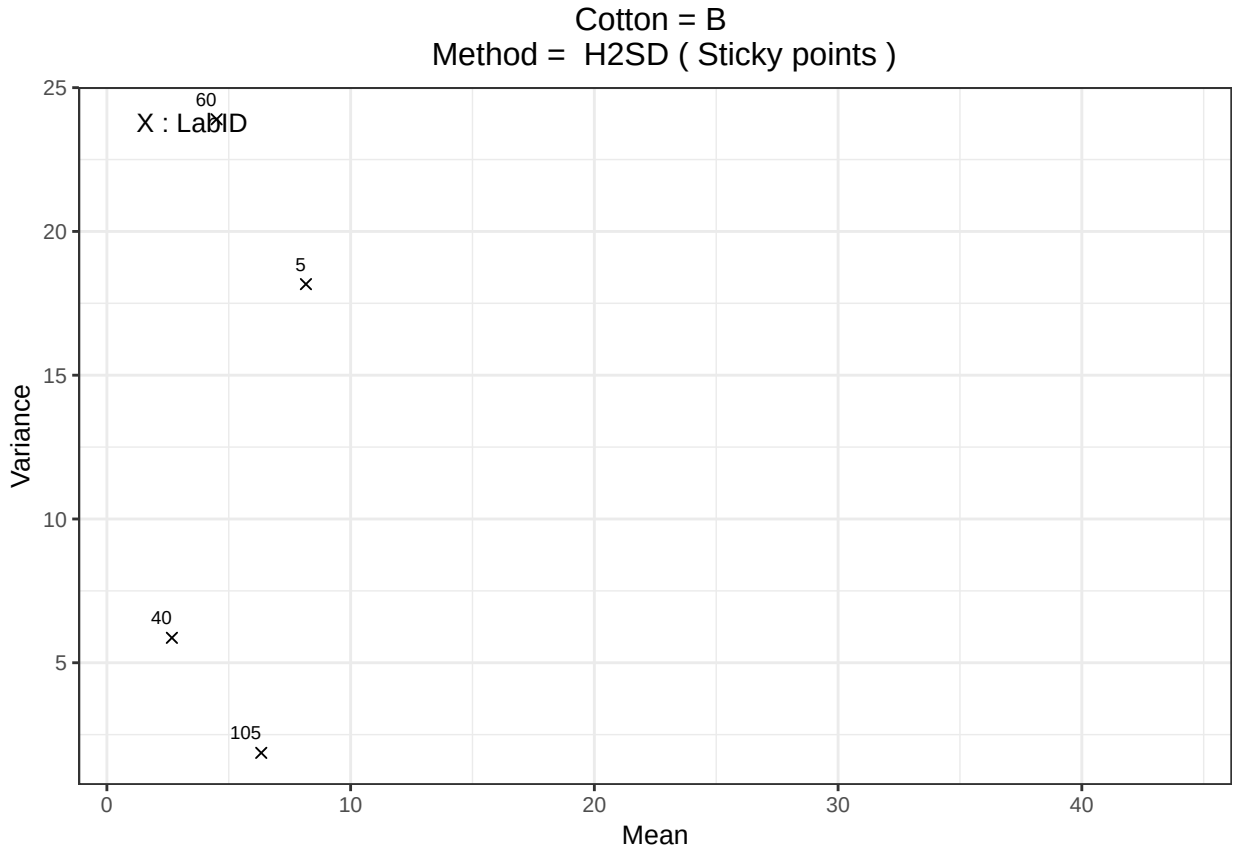
Cotton B : Variance between individual measurements = f(Mean) for all concerned labs

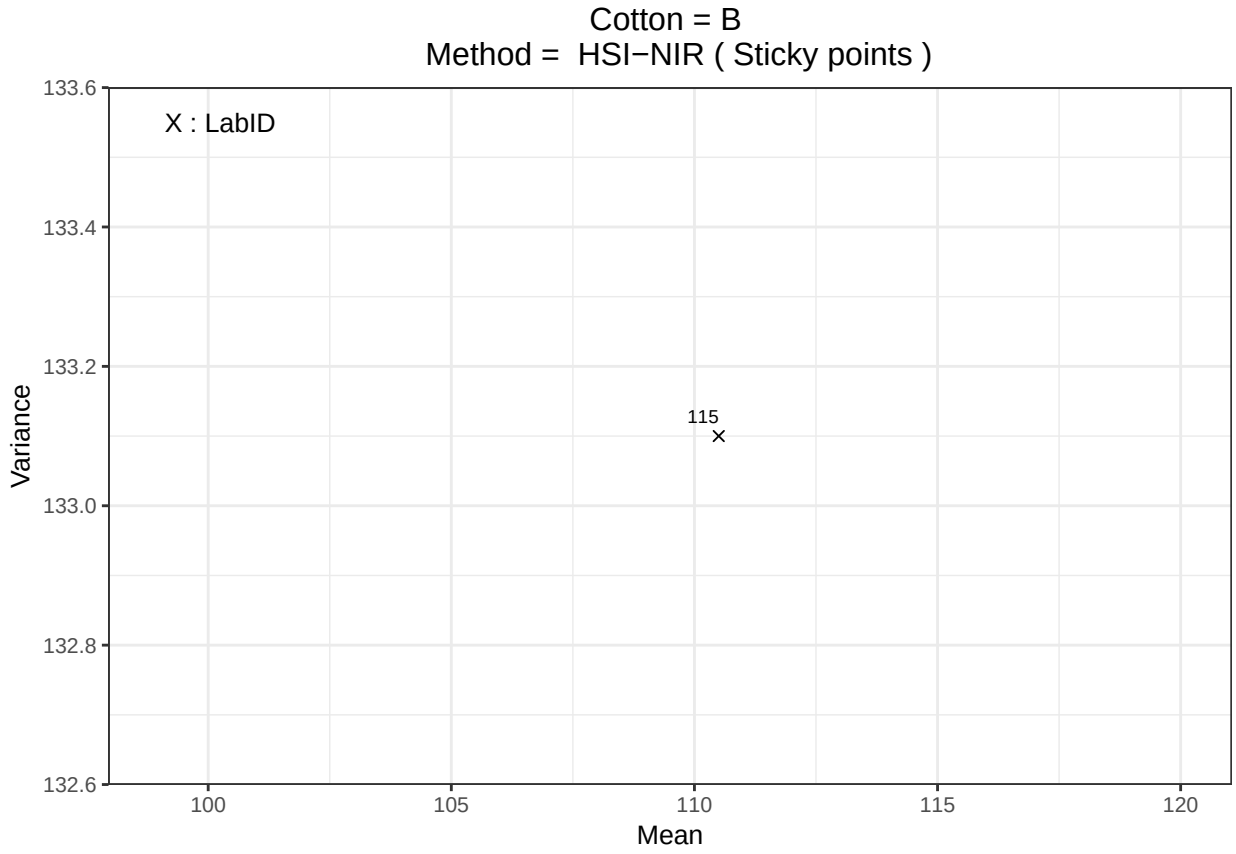


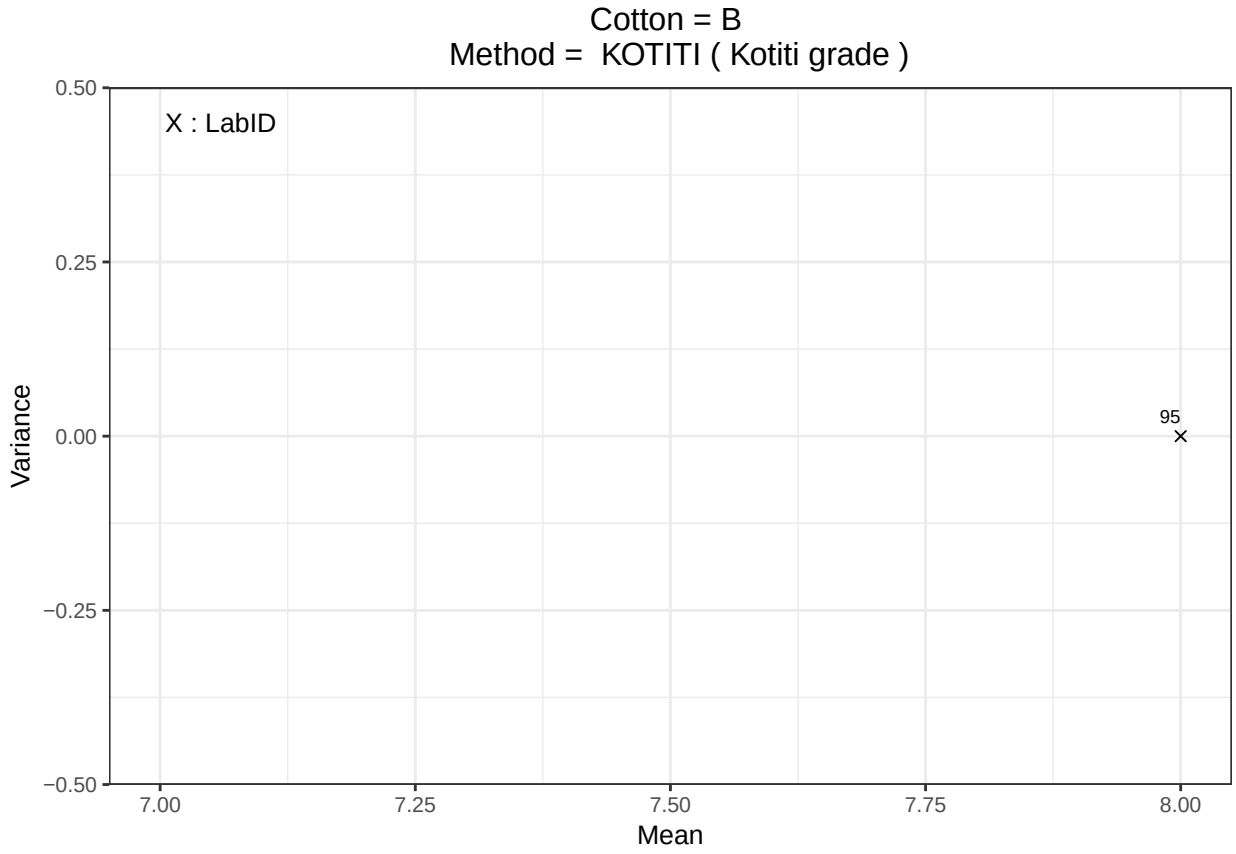

Cotton = B
Method = Clinitest (Color Chart)
X : LabID
15
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
0
1
2
3
4

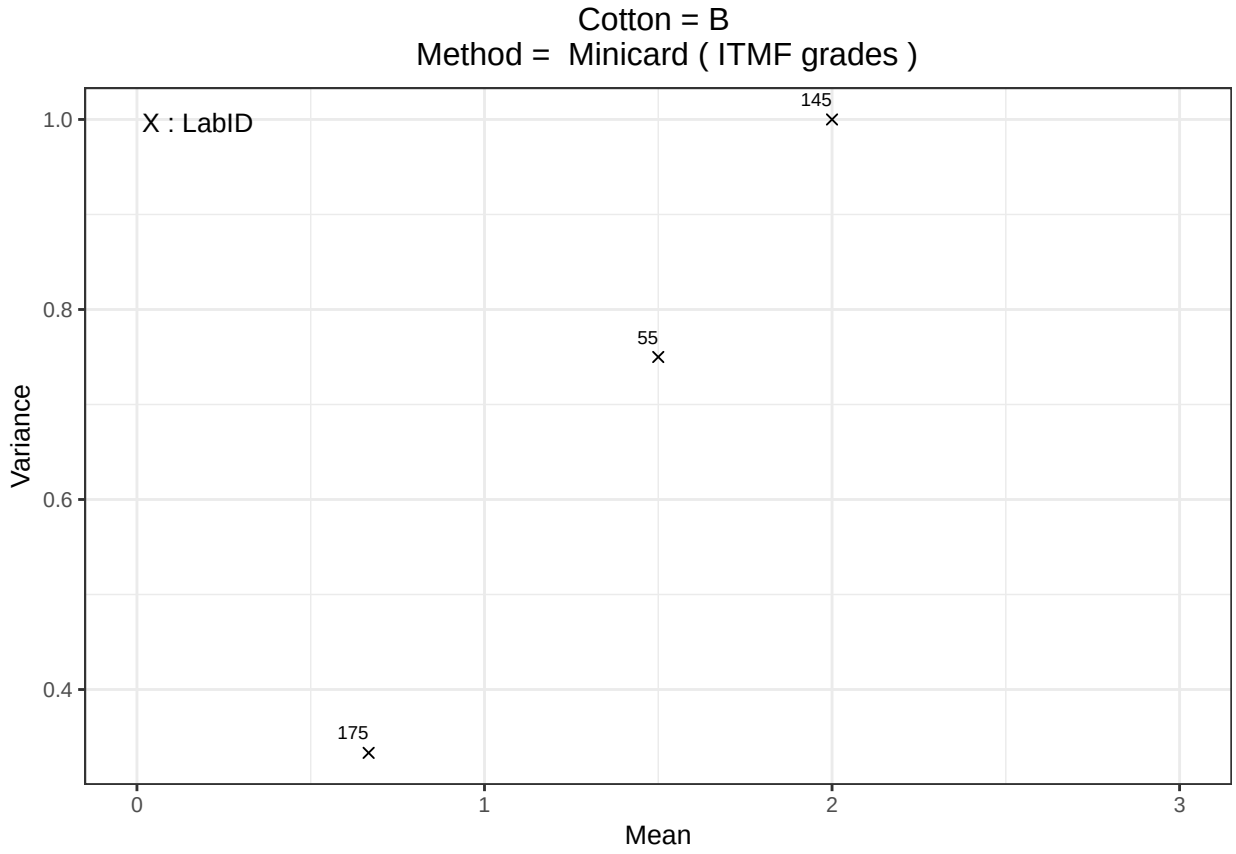

Cotton = B
Method = Contest−Fibermap (C/F GRADE)
X : LabID
110
75
80
125
150
2000
1000
Variance
200
400
600
Mean

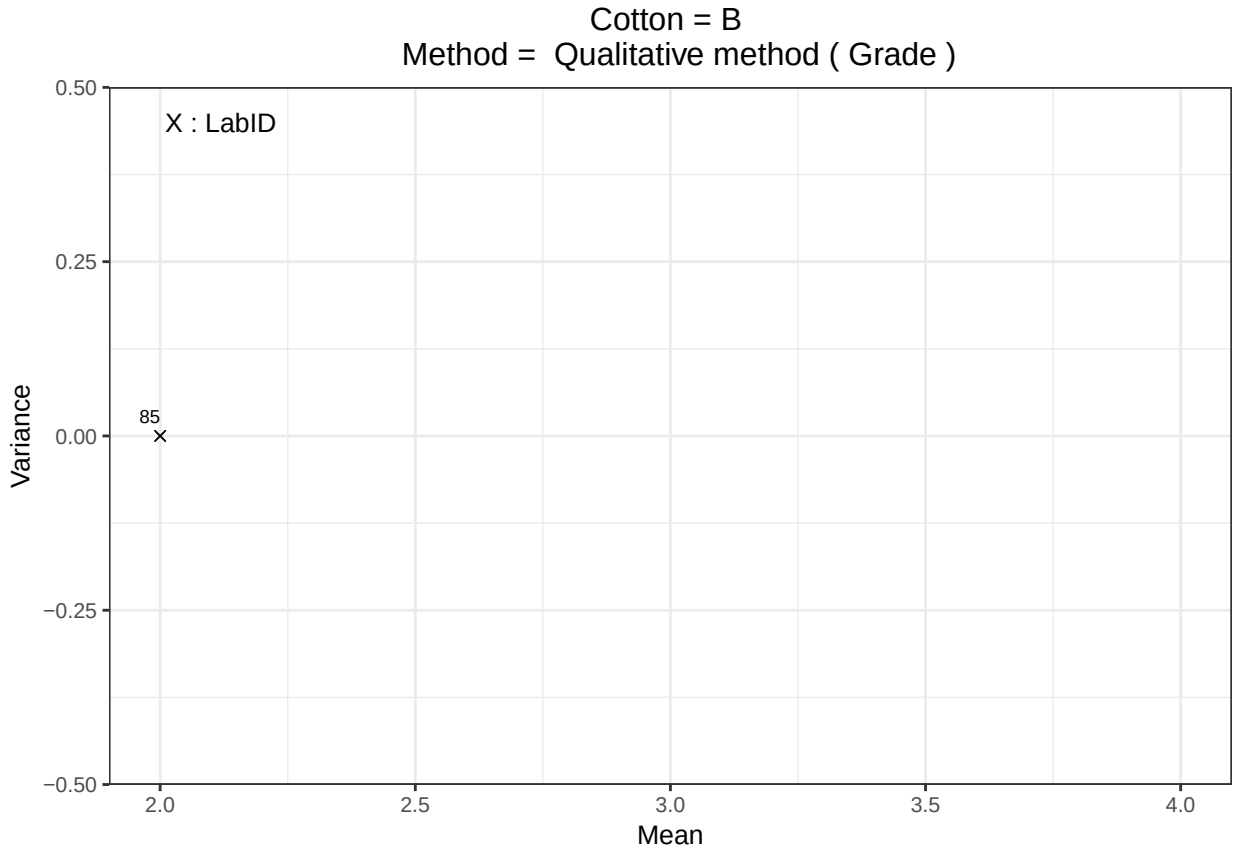

Cotton = B
Method = GB/T13785−1992 (Color degree)
X : LabID
100
Variance
Mean
0.8
0.6
0.4
0.2
0.0
−0.2
1
2
3
4

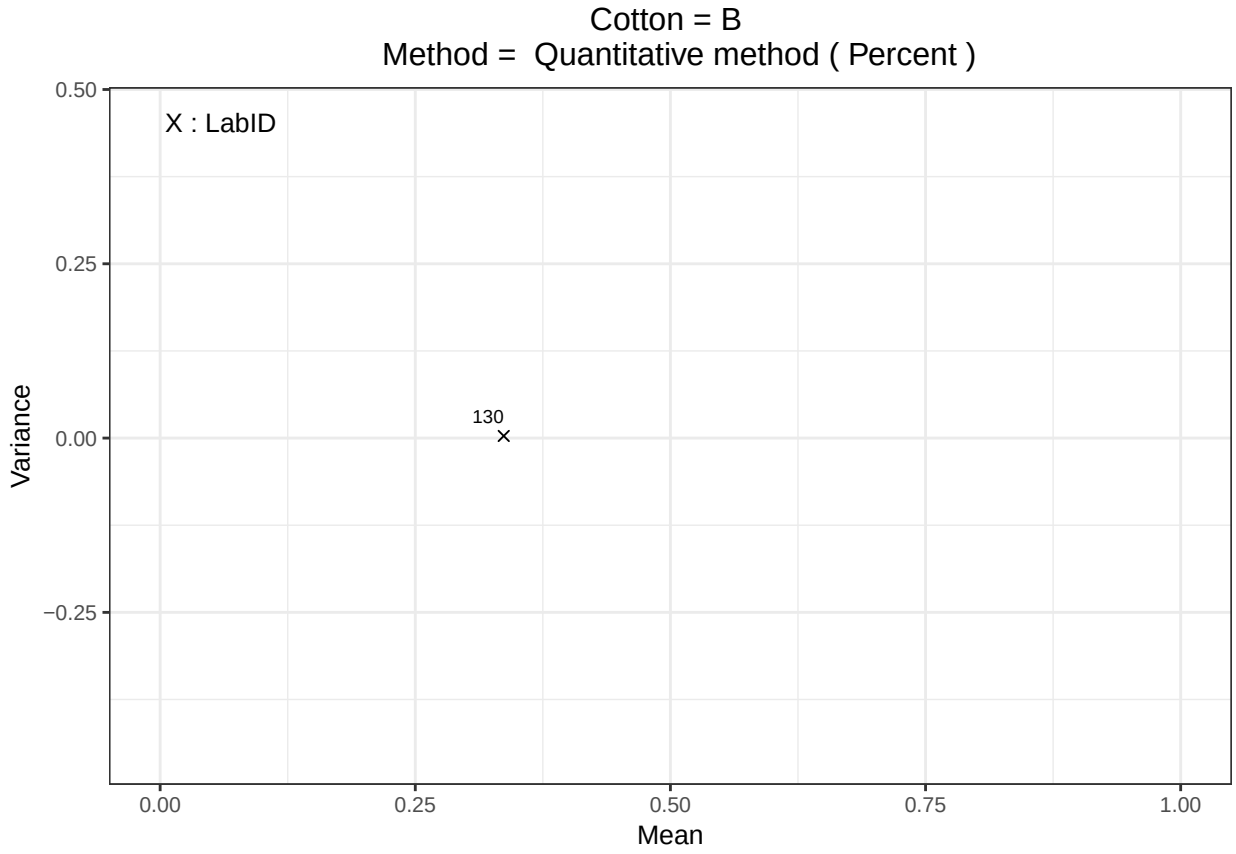

Cotton = B
Method = H2SD (Sticky points)
X : LabID
60
5
40
105
Variance
Mean
25
20
15
10
5
0
10
20
30
40

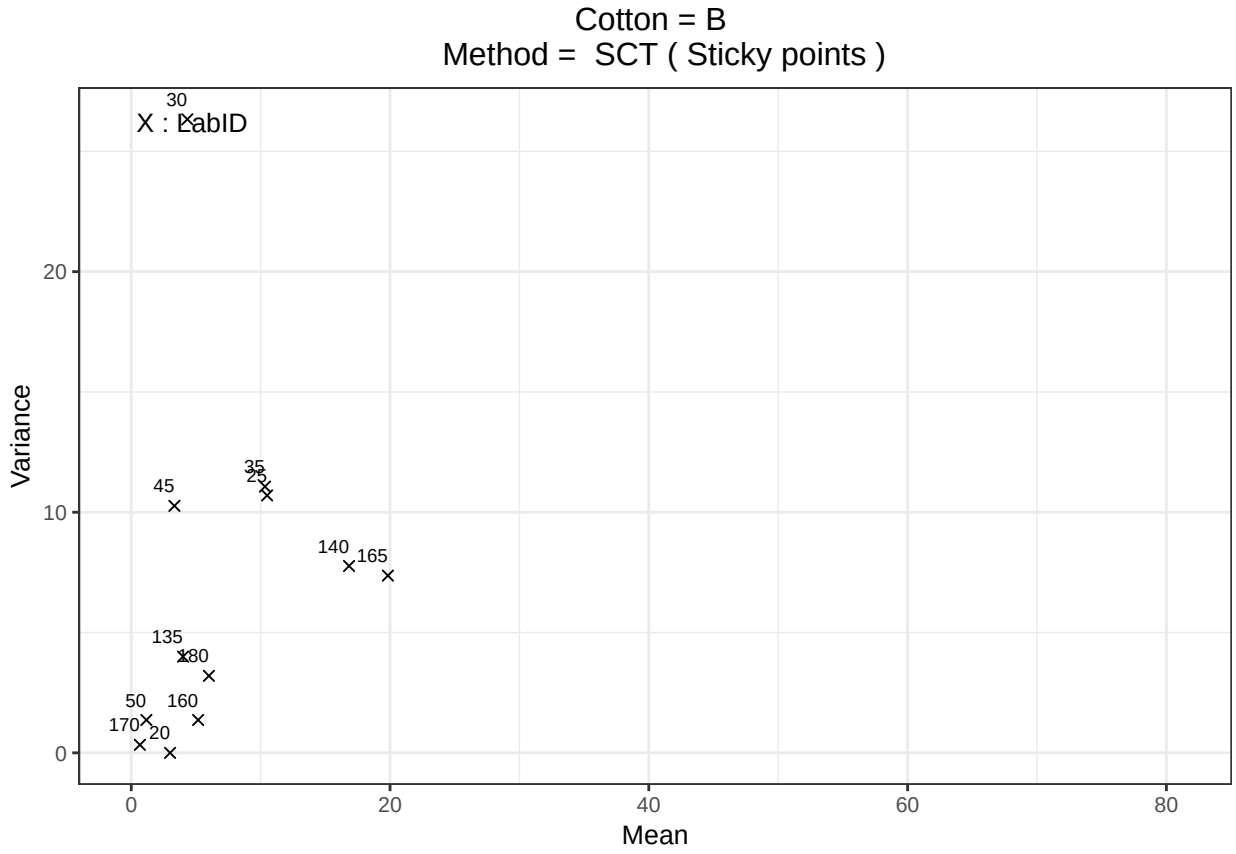

Cotton = B
Method = HSI−NIR (Sticky points)
X : LabID
115
Variance
Mean
133.6
133.4
133.2
133.0
132.8
132.6
100
105
110
115
120

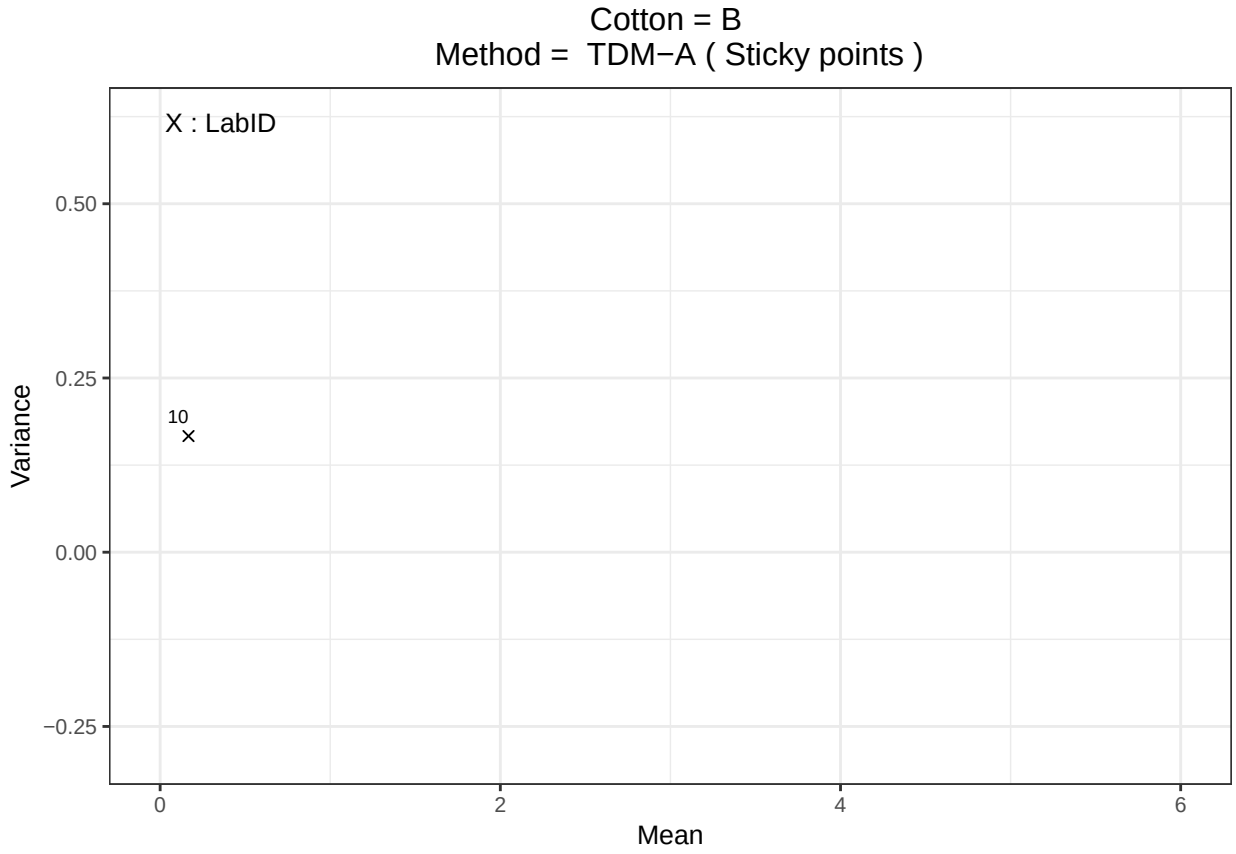

Cotton = B
Method = KOTITI (Kotiti grade)
X : LabID
95
0.50
0.25
0.00
−0.25
−0.50
Variance
7.00
7.25
7.50
7.75
8.00
Mean


Cotton = B
Method = Minicard (ITMF grades)
X : LabID
145
55
175
1.0
0.8
0.6
0.4
Variance
0
1
2
3
Mean

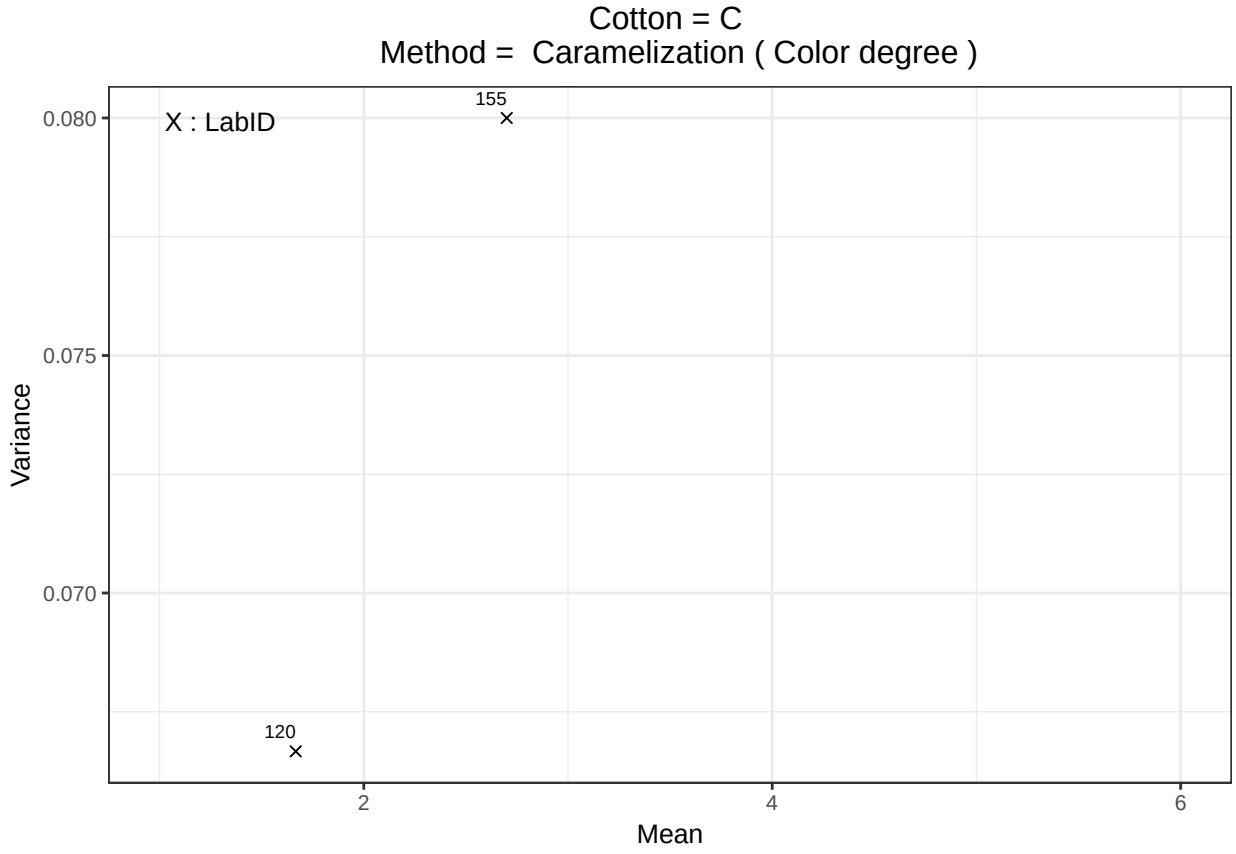

Cotton = B
Method = Qualitative method (Grade)
X : LabID
85
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
2.0
2.5
3.0
3.5
4.0

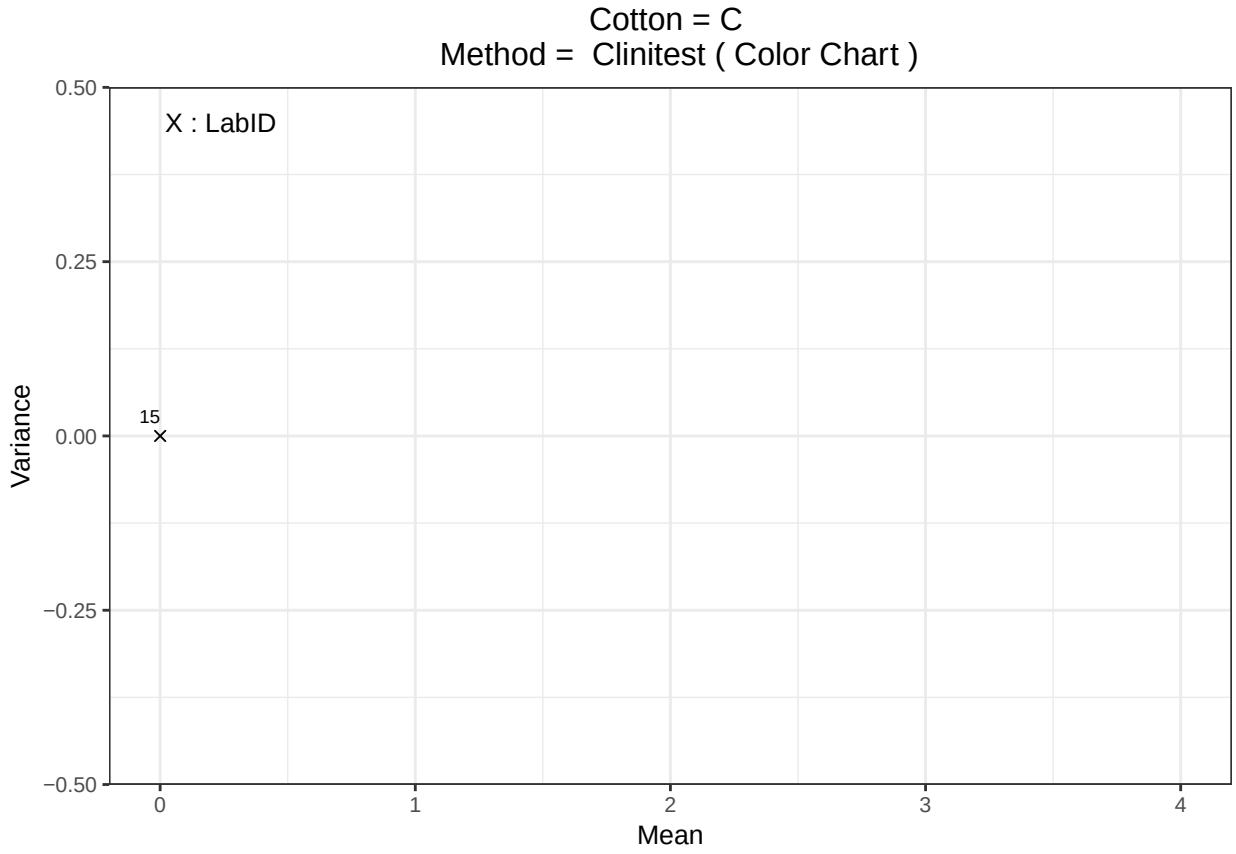

Cotton = B
Method = Quantitative method (Percent)
X : LabID
130
Variance
Mean
0.50
0.25
0.00
−0.25
0.00
0.25
0.50
0.75
1.00

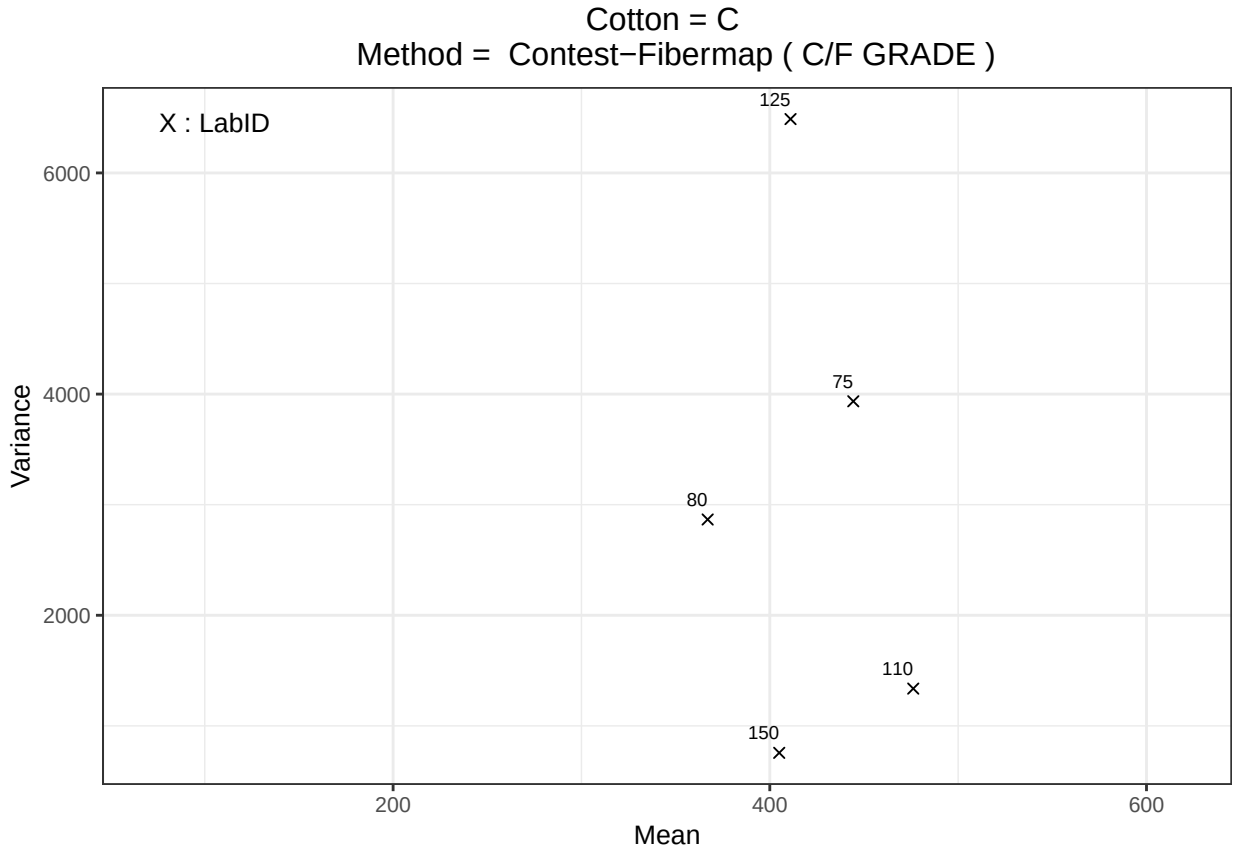

Cotton = B
Method = SCT (Sticky points)
X : LabID
Variance
Mean
0
10
20
0
20
40
60
80
30
45
35
25
140
165
135
180
50
160
170
20

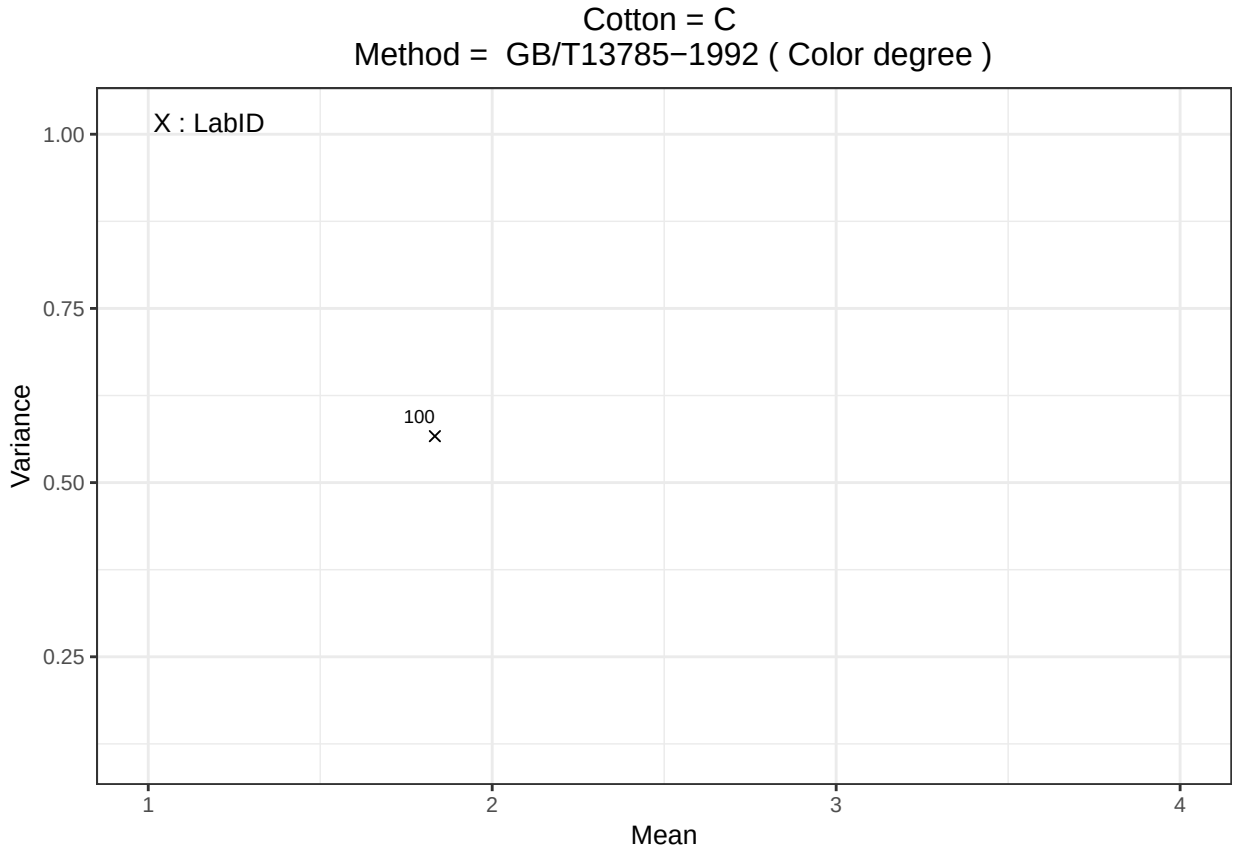

Cotton = B
Method = TDM−A (Sticky points)
X : LabID
0.50
0.25
0.00
−0.25
Variance
10
0
2
4
6
Mean

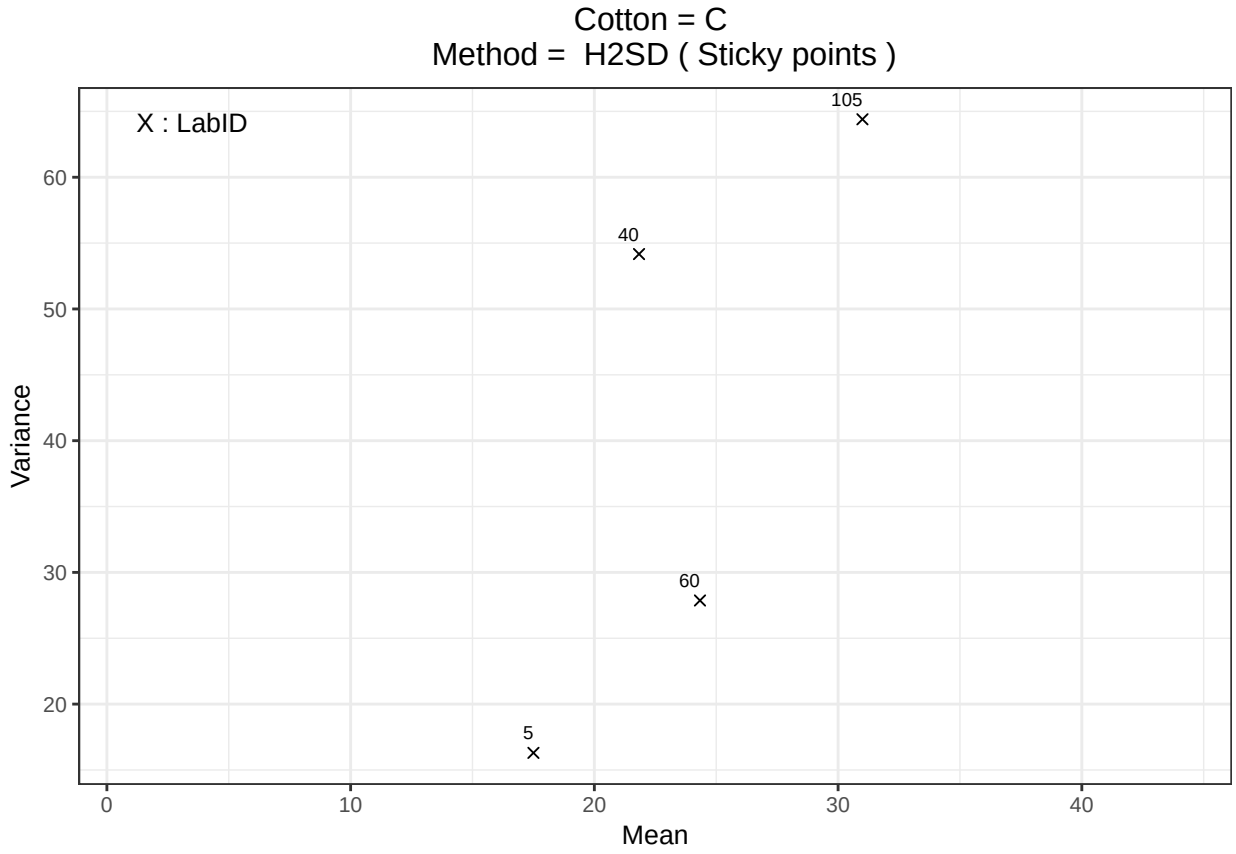
Cotton C : Variance between individual measurements = f(Mean) for all concerned labs

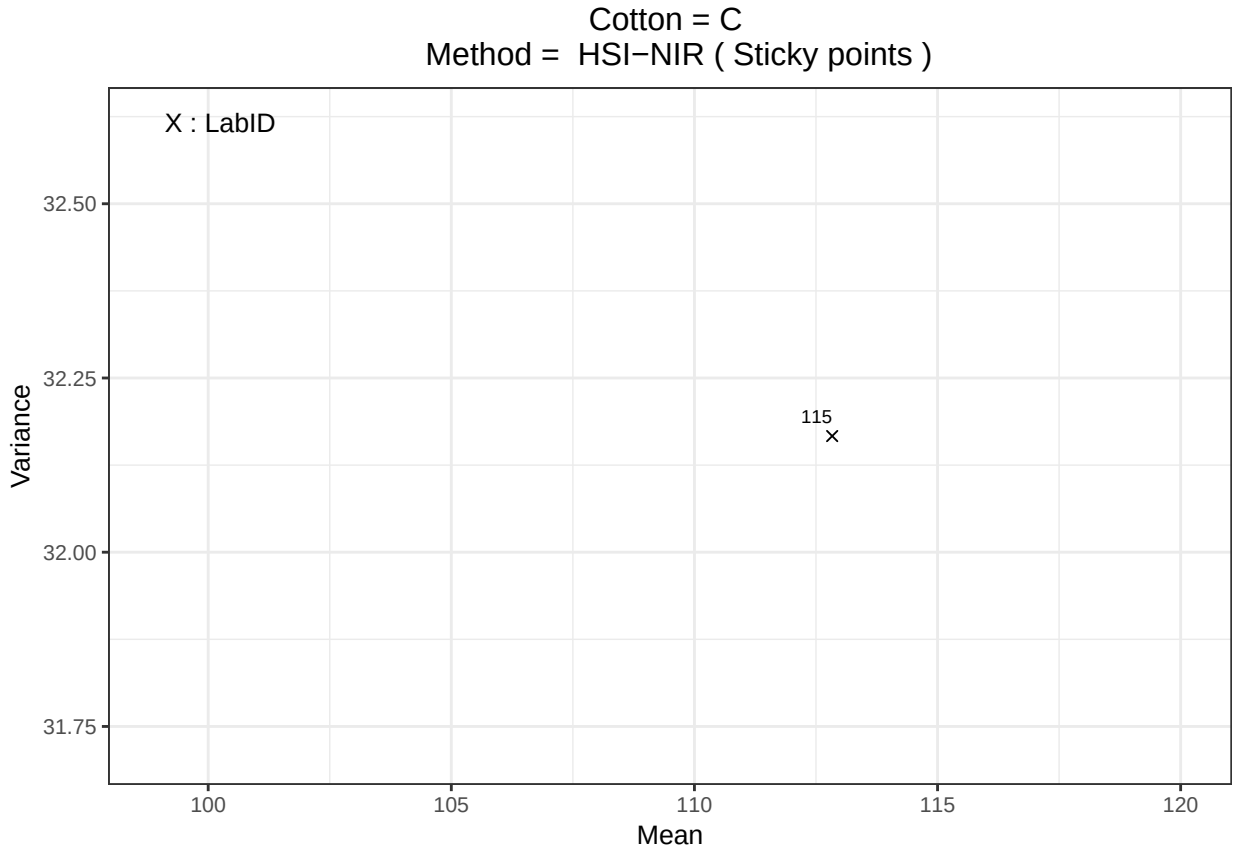


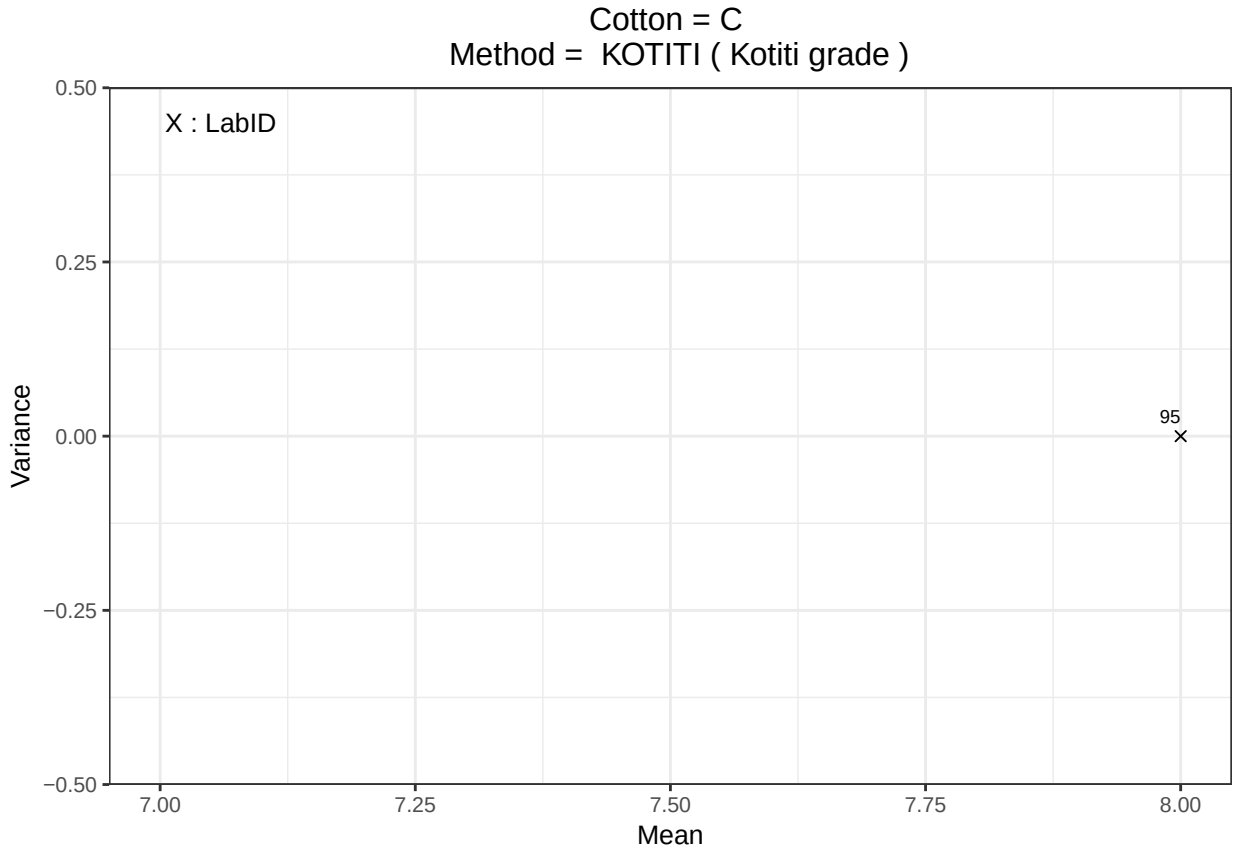

Cotton = C
Method = Clinitest (Color Chart)
X : LabID
15
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
0
1
2
3
4

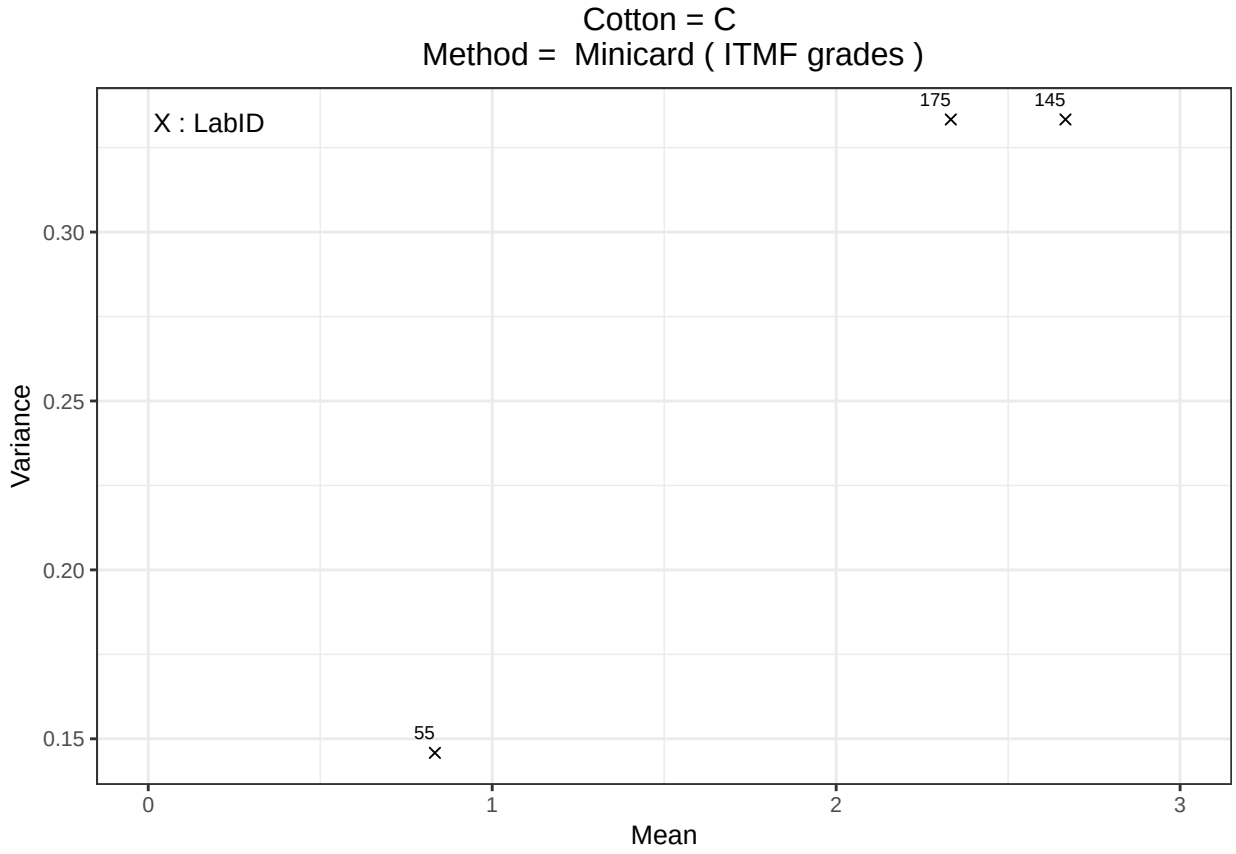

Cotton = C
Method = Contest−Fibermap (C/F GRADE)
X : LabID
125
75
80
110
150
6000
4000
2000
Variance
200
400
600
Mean

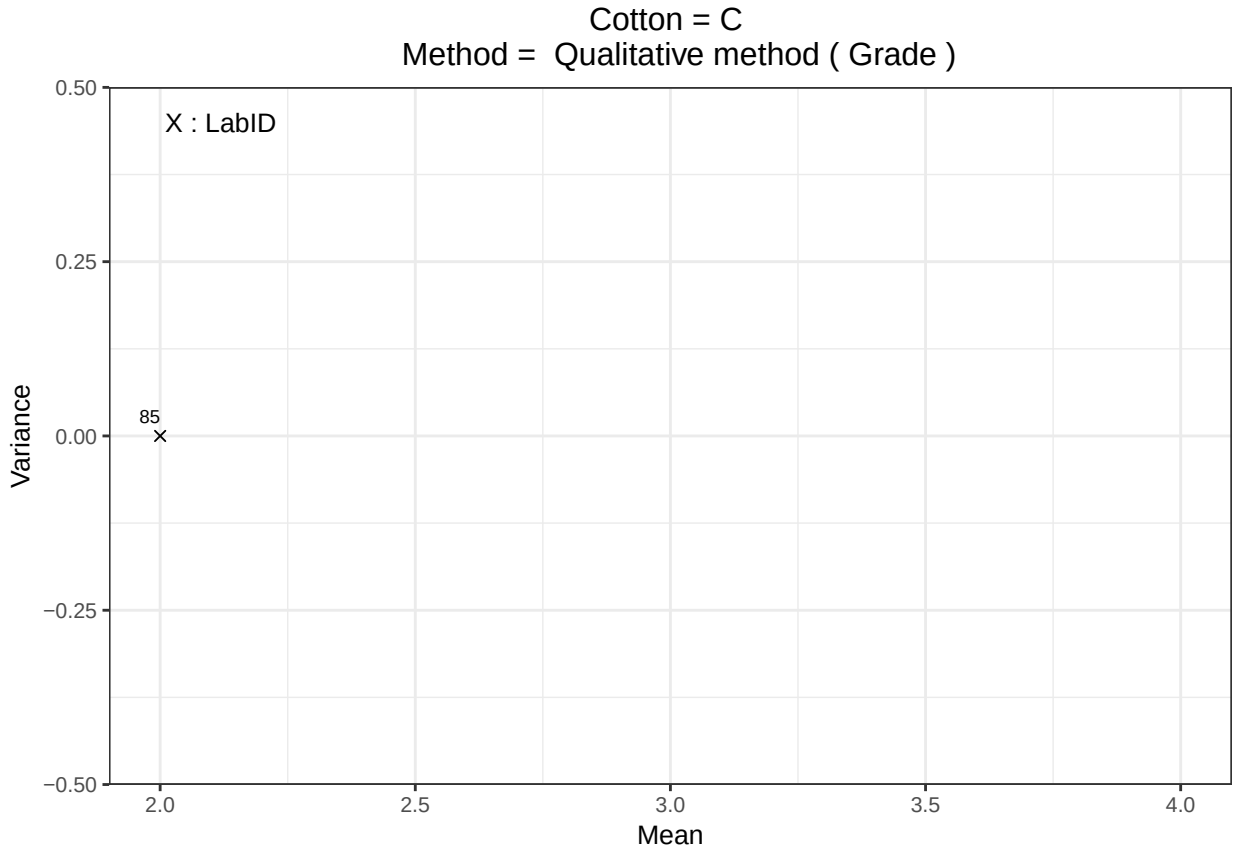

Cotton = C
Method = GB/T13785−1992 (Color degree)
X : LabID
1.00
0.75
0.50
0.25
Variance
100
1
2
3
4
Mean

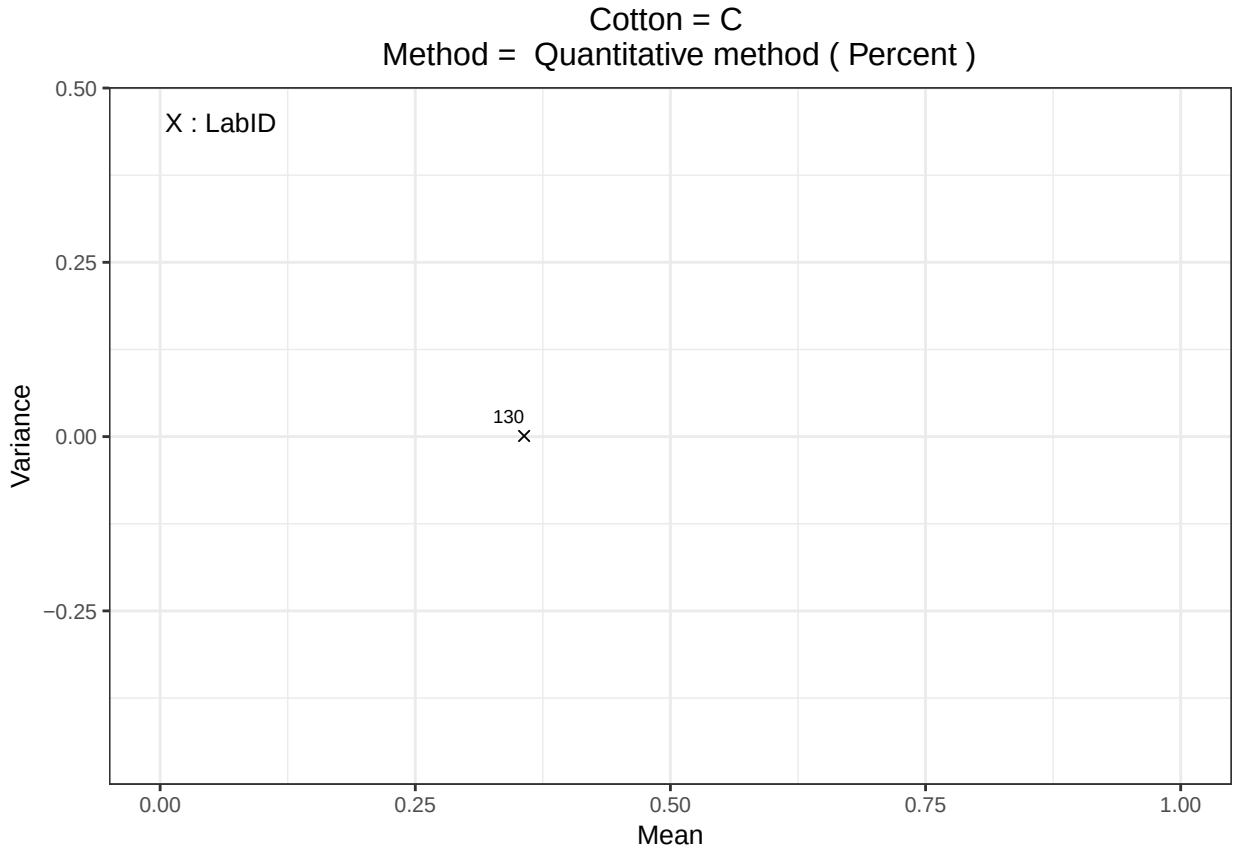

Cotton = C
Method = H2SD (Sticky points)
X : LabID
105
40
60
5
Variance
Mean
60
50
40
30
20
0
10
20
30
40

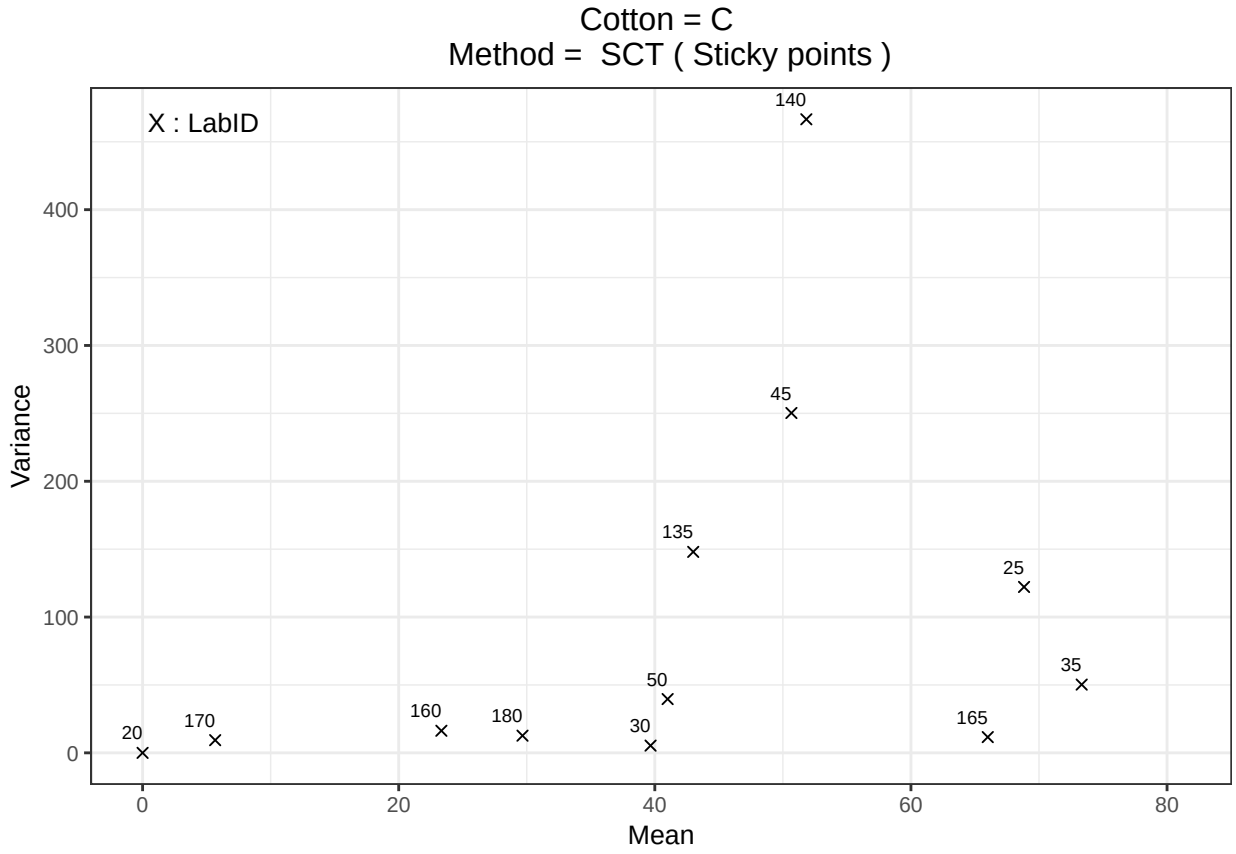

Cotton = C
Method = HSI−NIR (Sticky points)
X : LabID
32.50
32.25
32.00
31.75
Variance
115
100
105
110
115
120
Mean

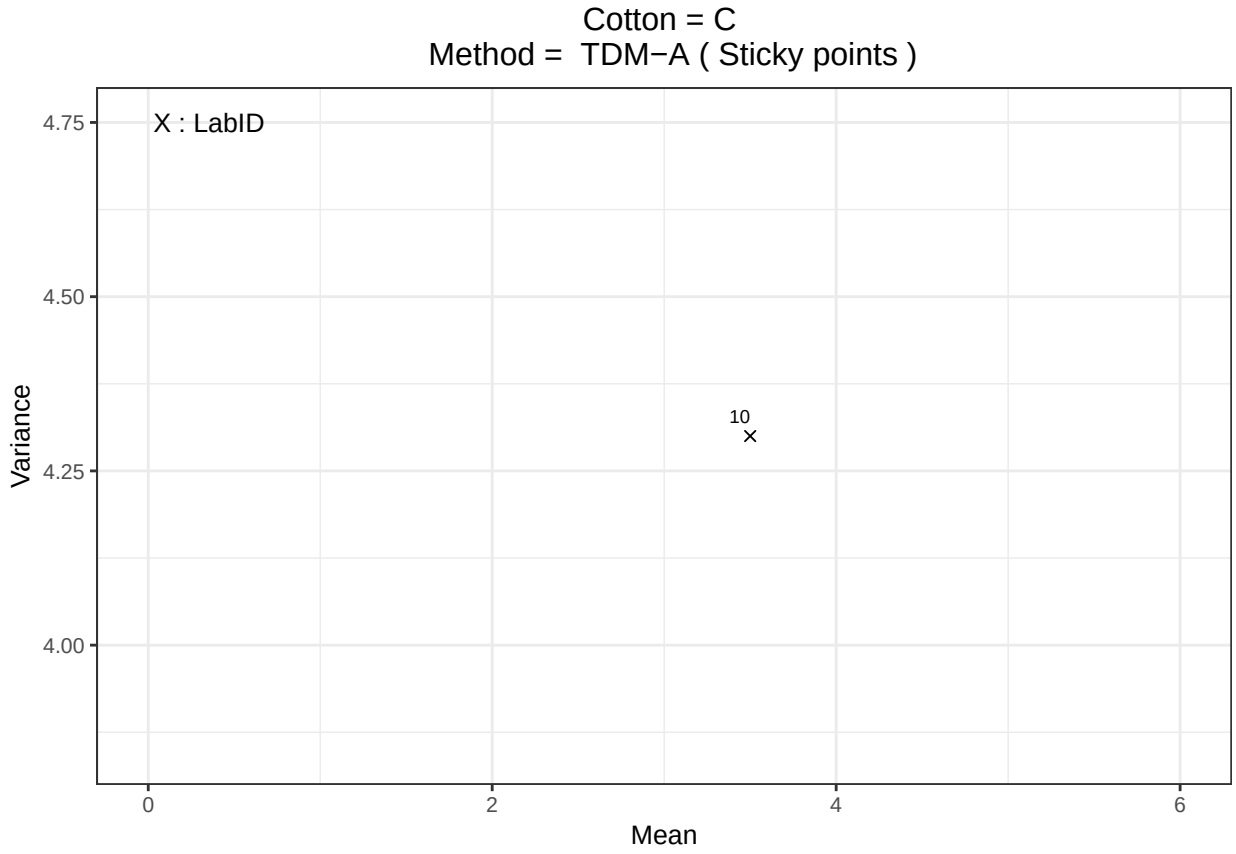

Cotton = C
Method = KOTITI (Kotiti grade)
X : LabID
95
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
7.00
7.25
7.50
7.75
8.00


Cotton = C
Method = Minicard (ITMF grades)
X : LabID
175
145
55
0.30
0.25
0.20
0.15
Variance
0
1
2
3
Mean

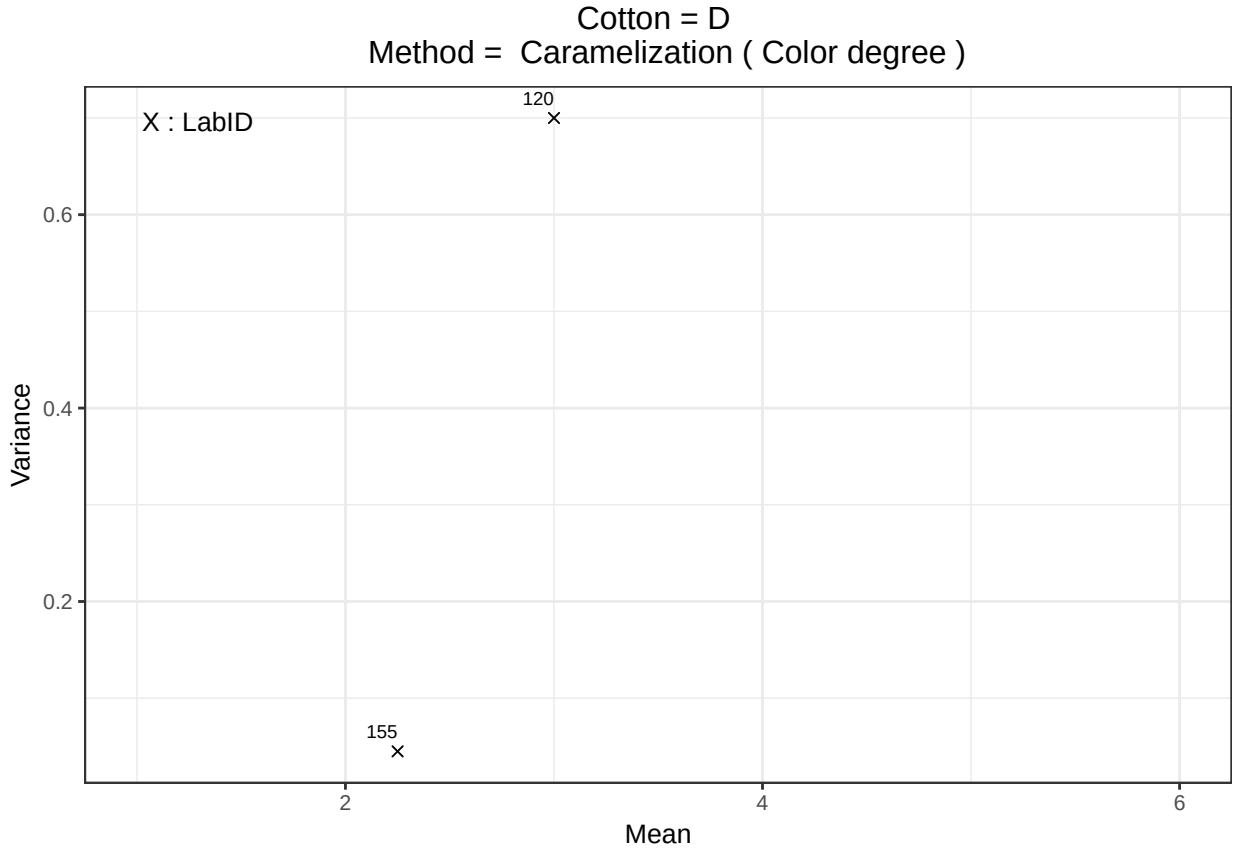

Cotton = C
Method = Qualitative method (Grade)
X : LabID
85
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
2.0
2.5
3.0
3.5
4.0

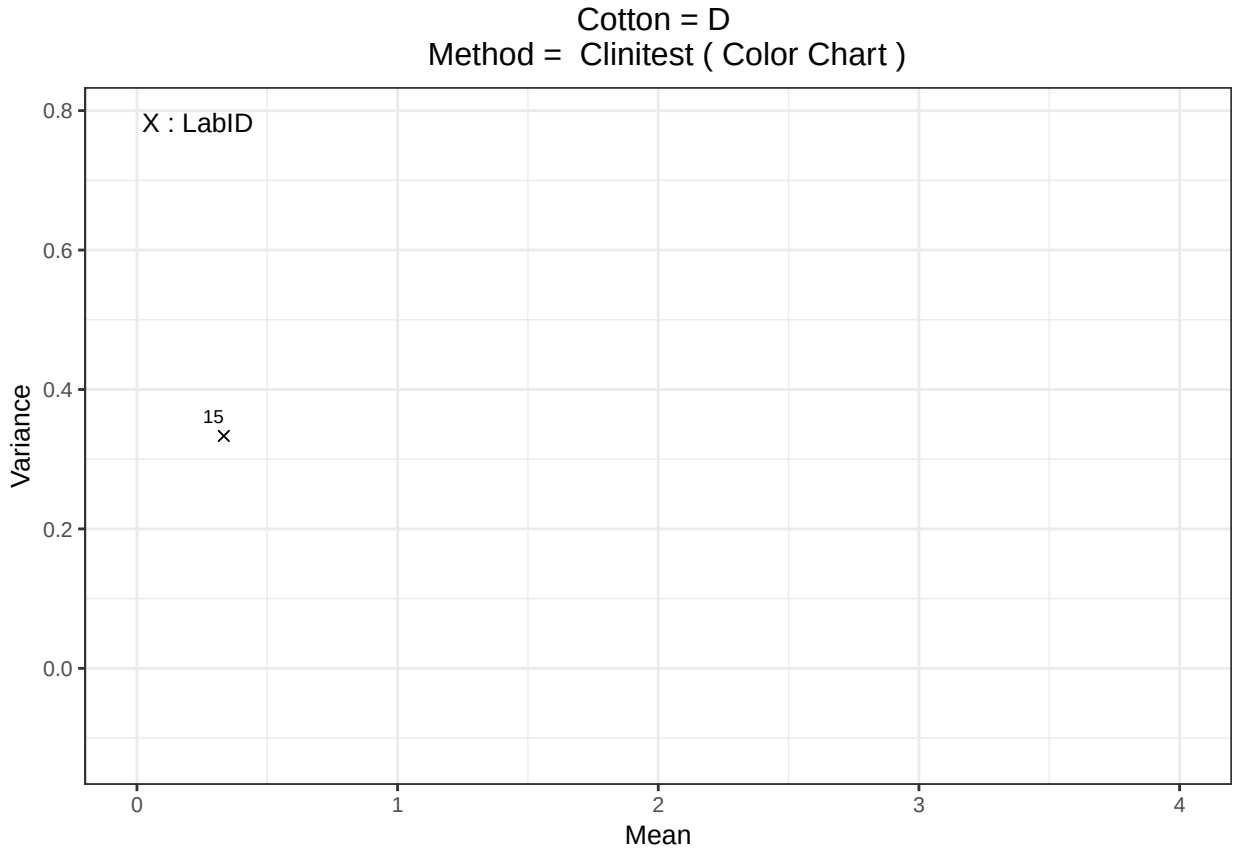

Cotton = C
Method = Quantitative method (Percent)
X : LabID
130
Variance
Mean
0.50
0.25
0.00
−0.25
0.00
0.25
0.50
0.75
1.00

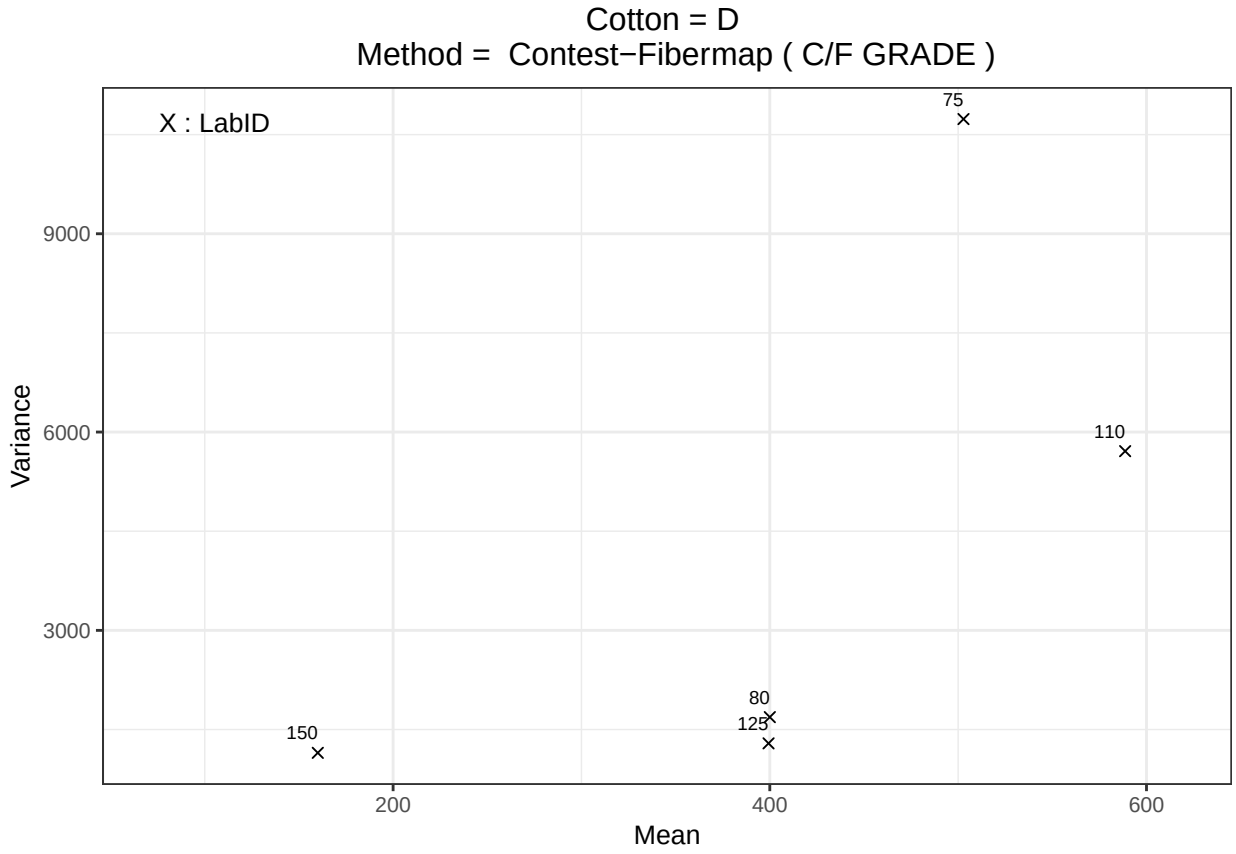

Cotton = C
Method = SCT (Sticky points)
X : LabID
Variance
Mean
0
100
200
300
400
0
20
40
60
80
140
45
135
25
35
50
160
180
170
20
30
165

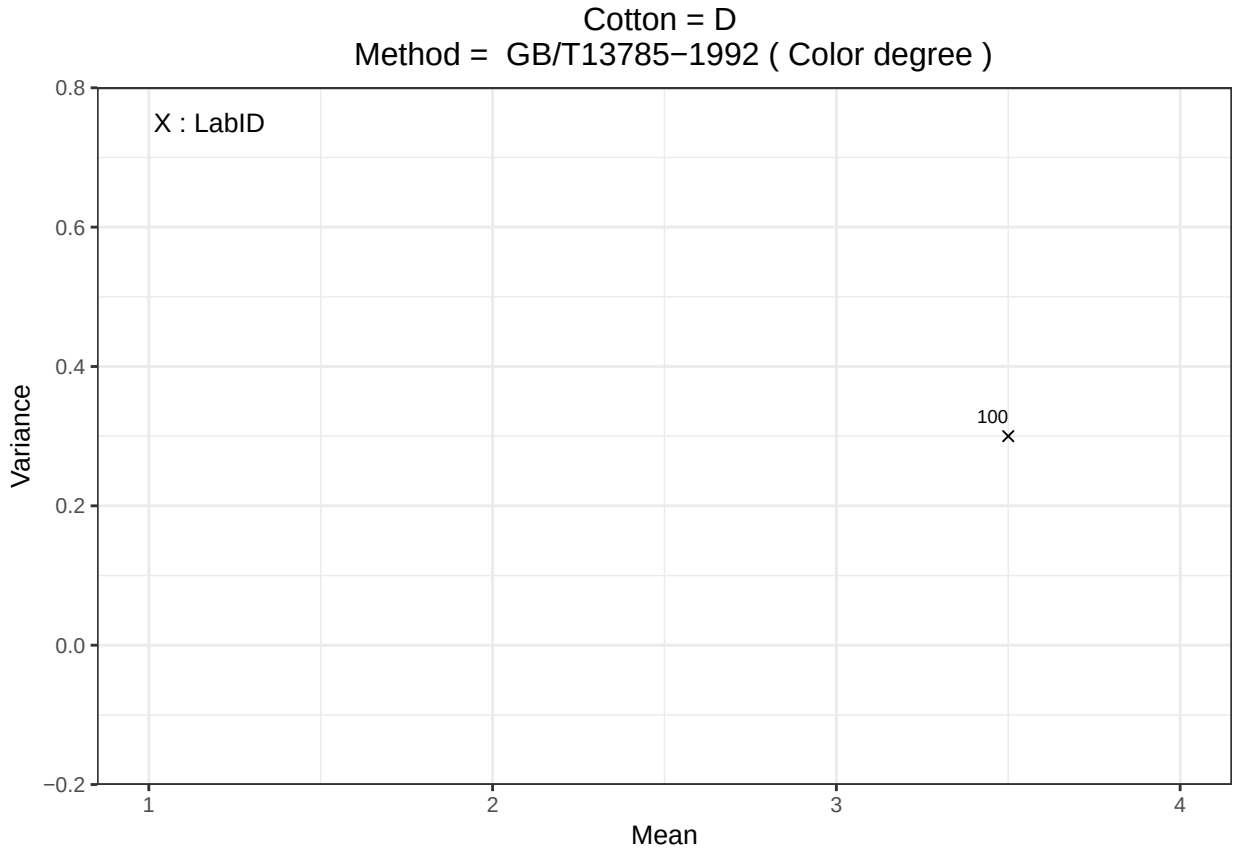

Cotton = C
Method = TDM−A (Sticky points)
X : LabID
4.75
4.50
4.25
4.00
Variance
10
0
2
4
6
Mean

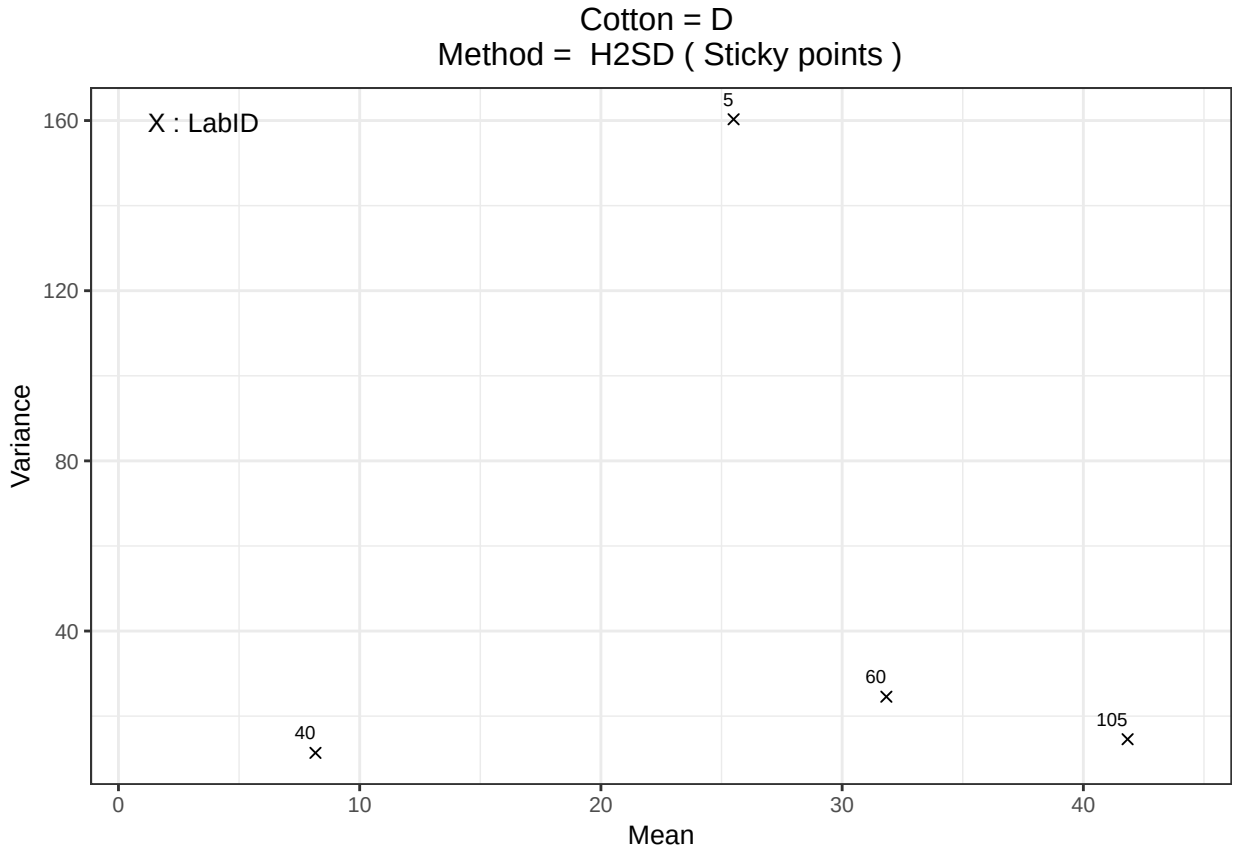
Cotton D : Variance between individual measurements = f(Mean) for all concerned labs

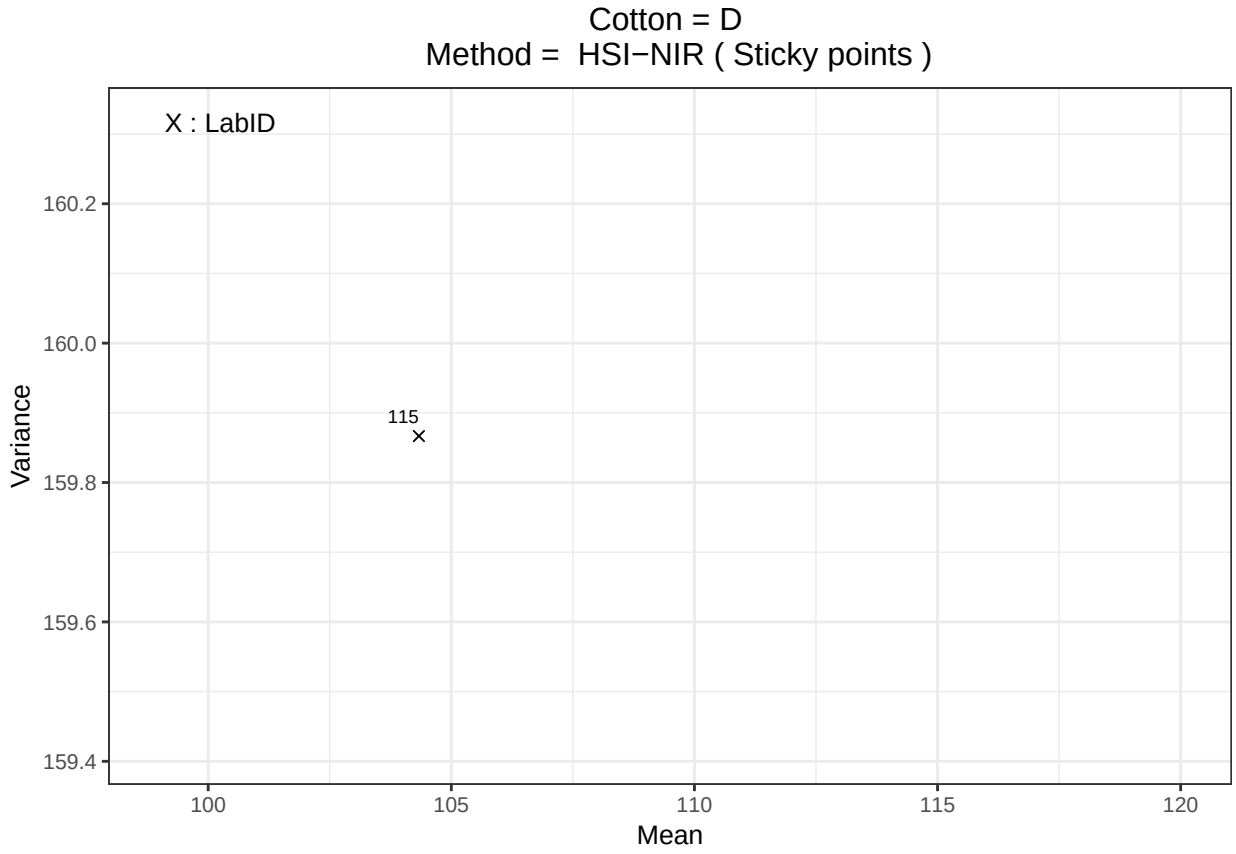


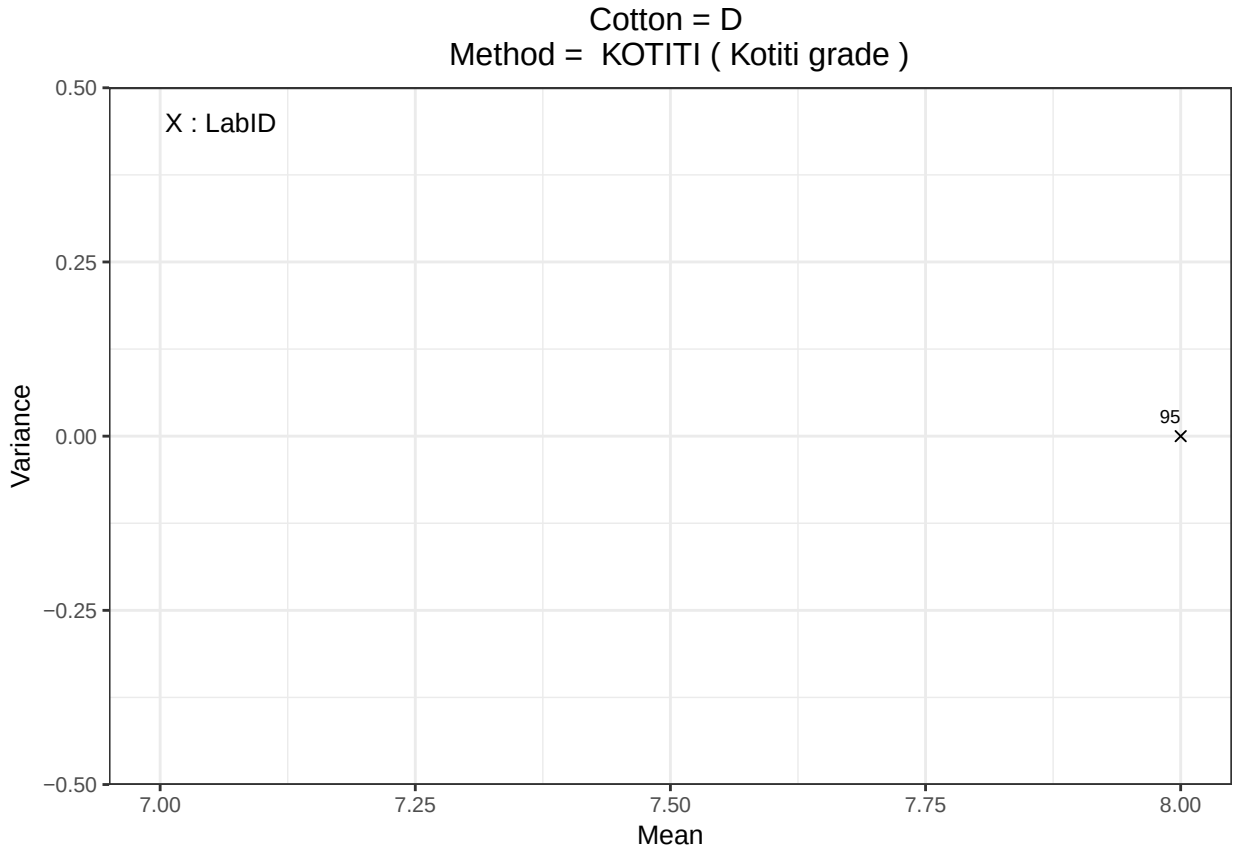

Cotton = D
Method = Clinitest (Color Chart)
X : LabID
15
Variance
Mean
0.0
0.2
0.4
0.6
0.8
0
1
2
3
4

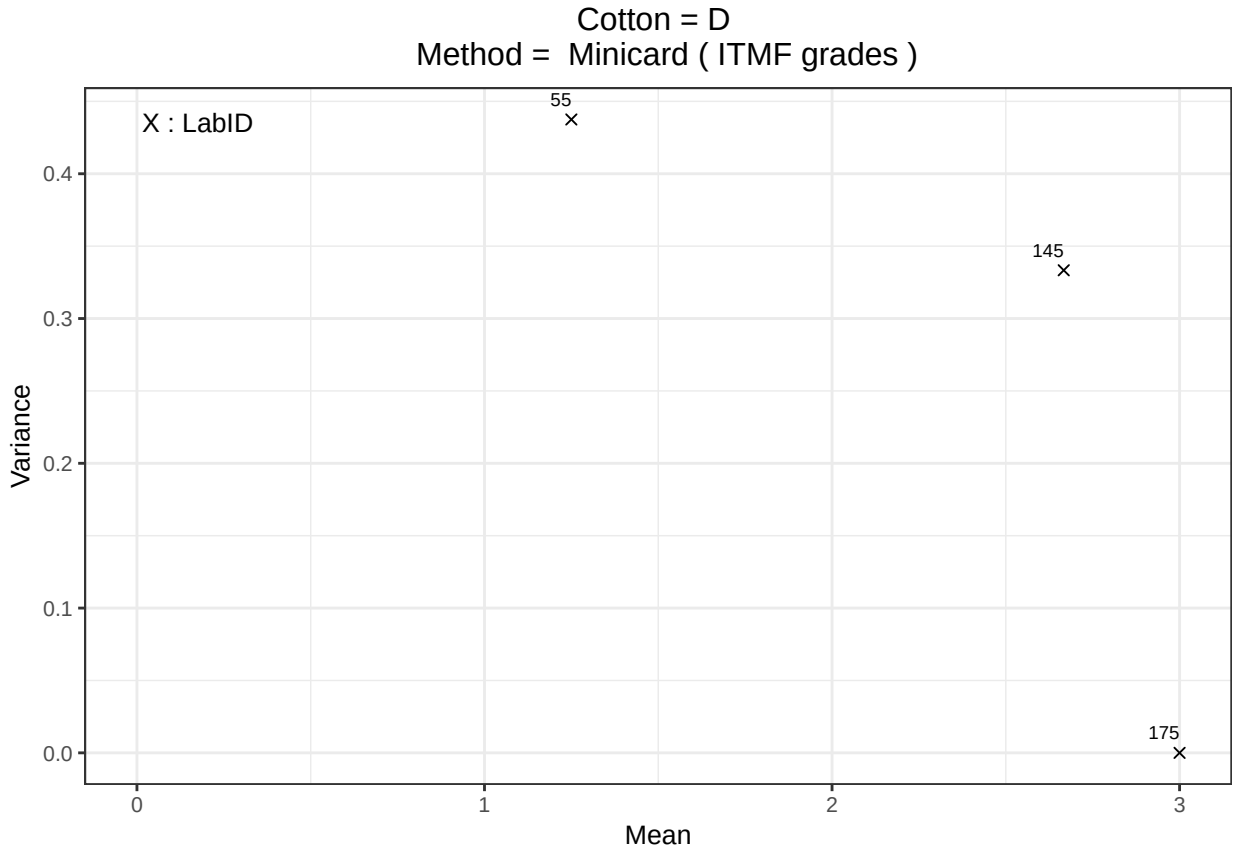

Cotton = D
Method = Contest−Fibermap (C/F GRADE)
X : LabID
75
110
80
125
150
9000
6000
3000
200
400
600
Variance
Mean

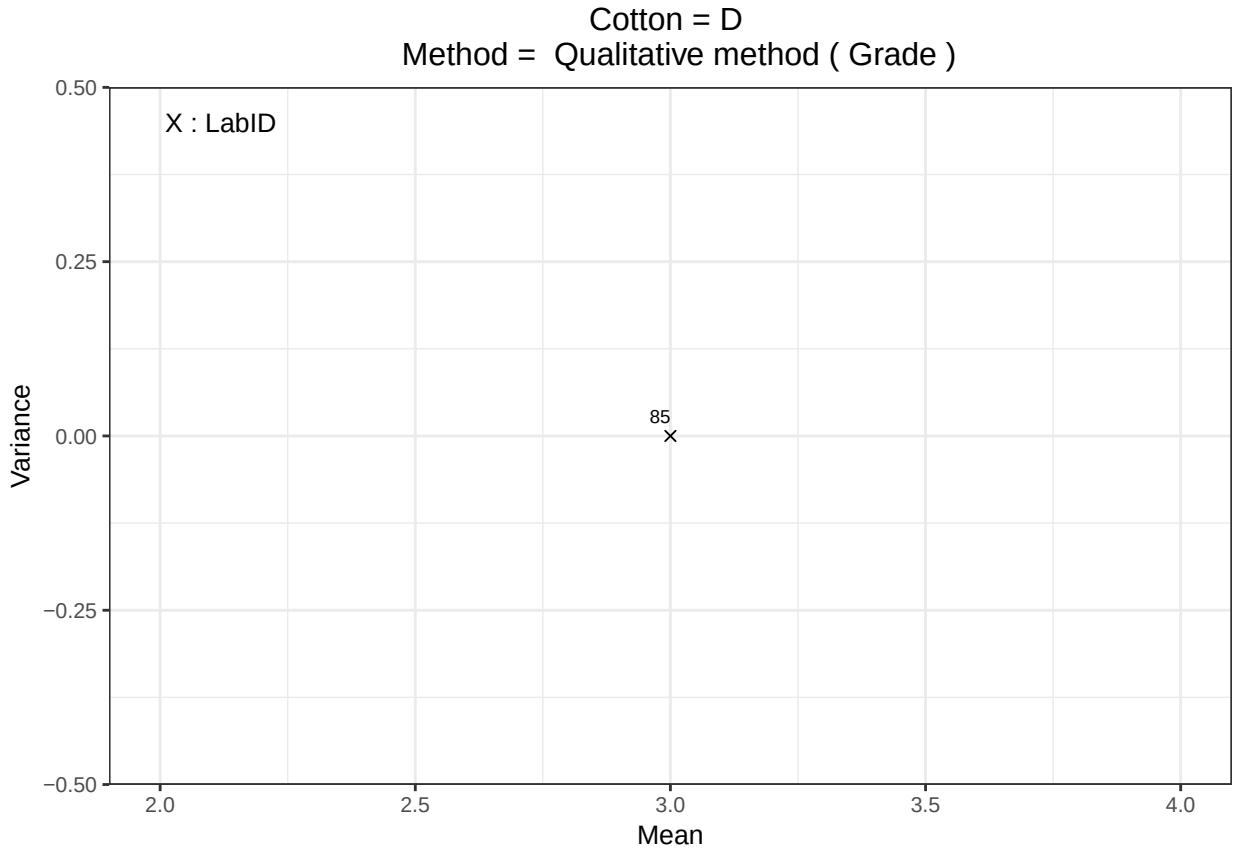

Cotton = D
Method = GB/T13785−1992 (Color degree)
X : LabID
100
Variance
Mean
0.8
0.6
0.4
0.2
0.0
−0.2
1
2
3
4

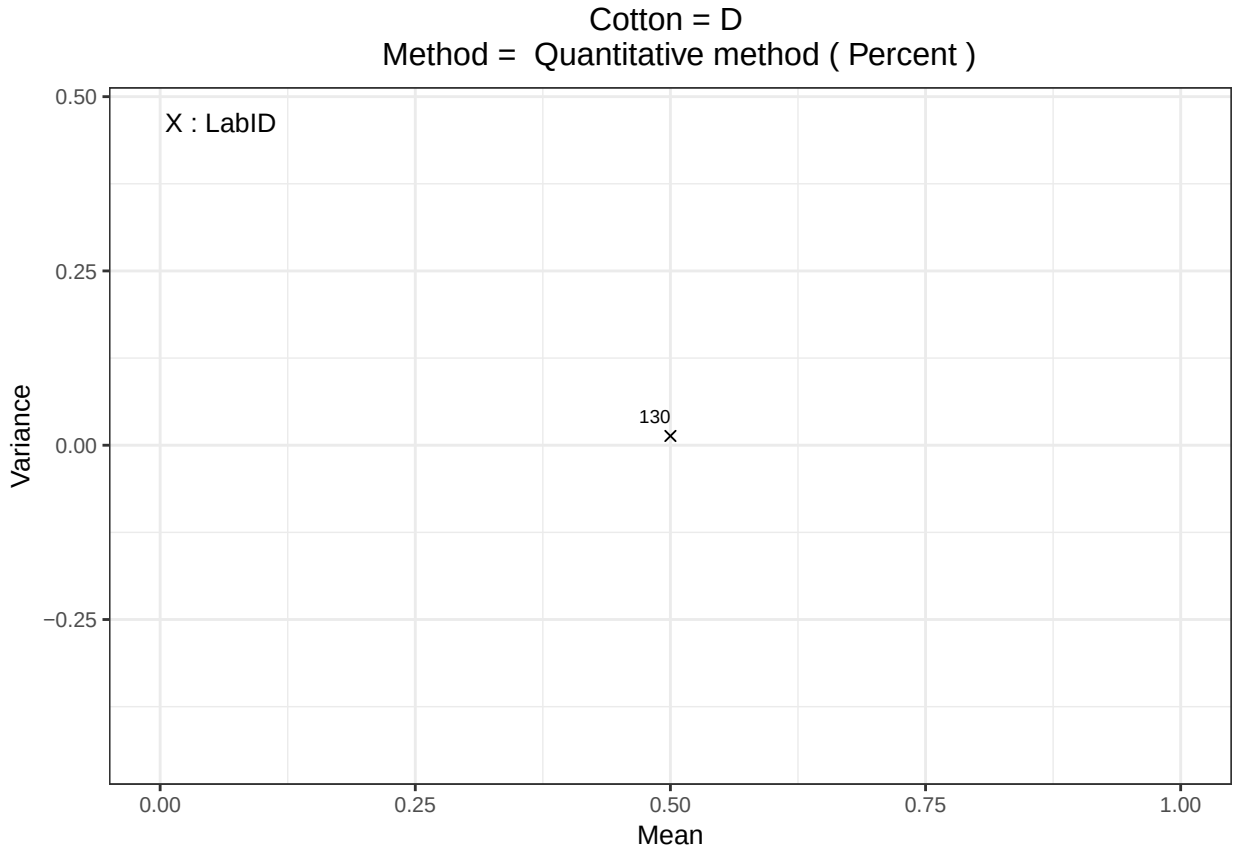

Cotton = D
Method = H2SD (Sticky points)
X : LabID
Variance
Mean
160
120
80
40
0
10
20
30
40
5
60
105
40

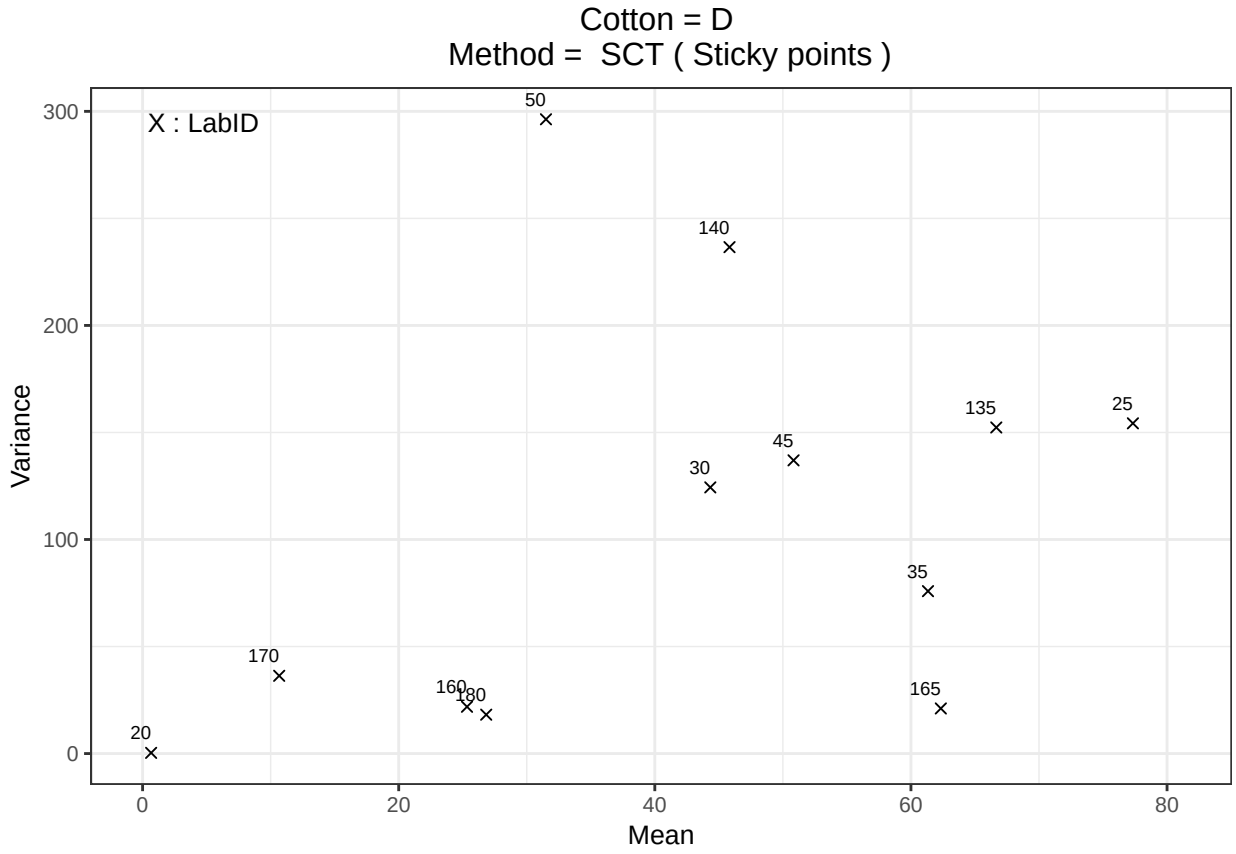

Cotton = D
Method = HSI−NIR (Sticky points)
X : LabID
115
160.2
160.0
159.8
159.6
159.4
Variance
100
105
110
115
120
Mean

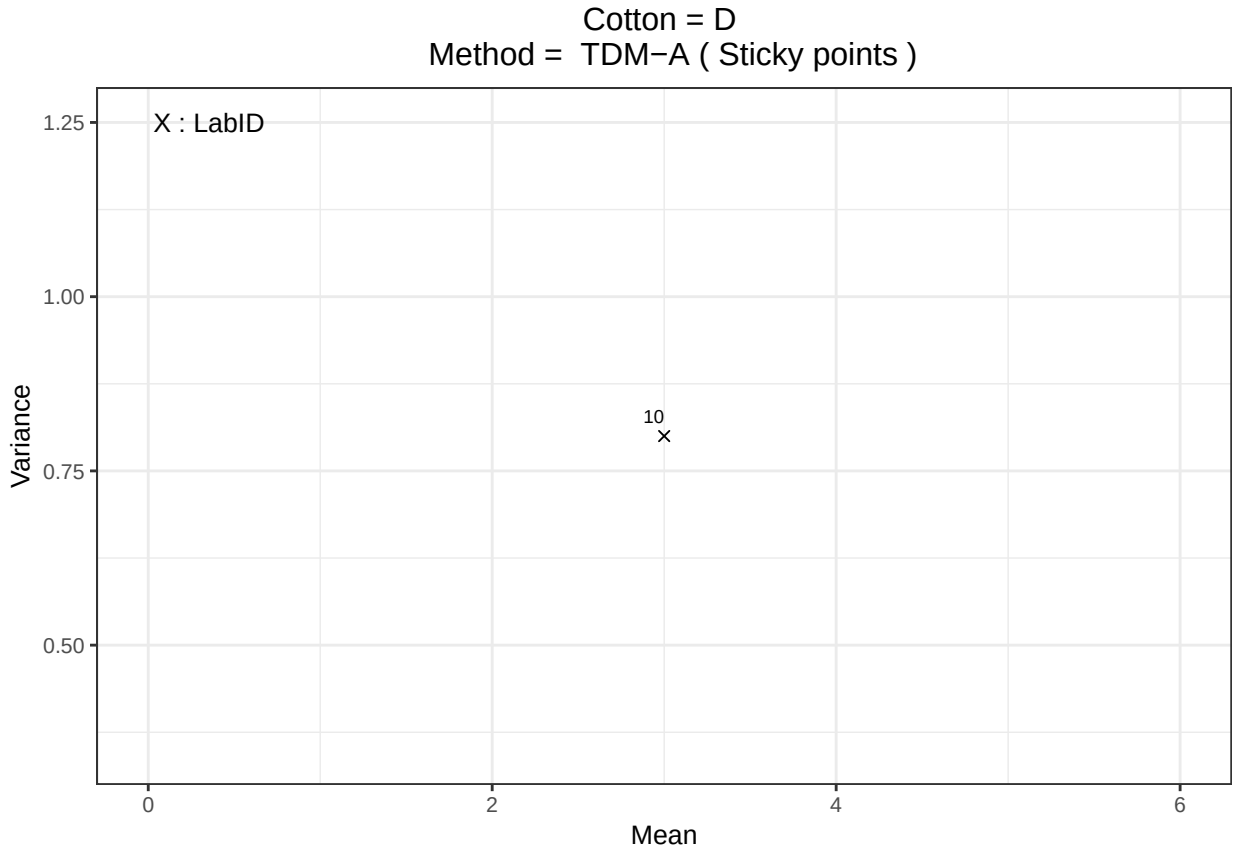

Cotton = D
Method = KOTITI (Kotiti grade)
X : LabID
95
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
7.00
7.25
7.50
7.75
8.00


Cotton = D
Method = Minicard (ITMF grades)
X : LabID
55
145
175
Variance
0.0
0.1
0.2
0.3
0.4
0
1
2
3
Mean

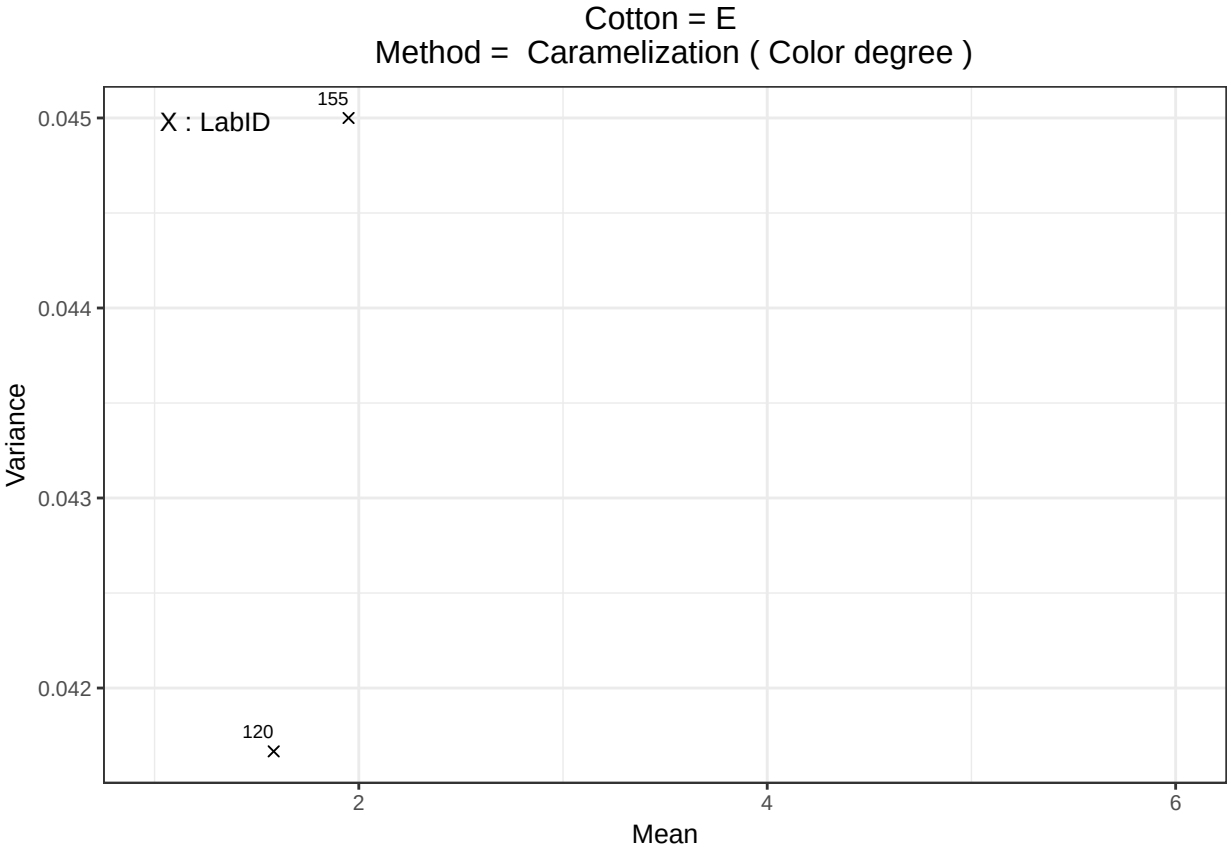

Cotton = D
Method = Qualitative method (Grade)
X : LabID
85
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
2.0
2.5
3.0
3.5
4.0

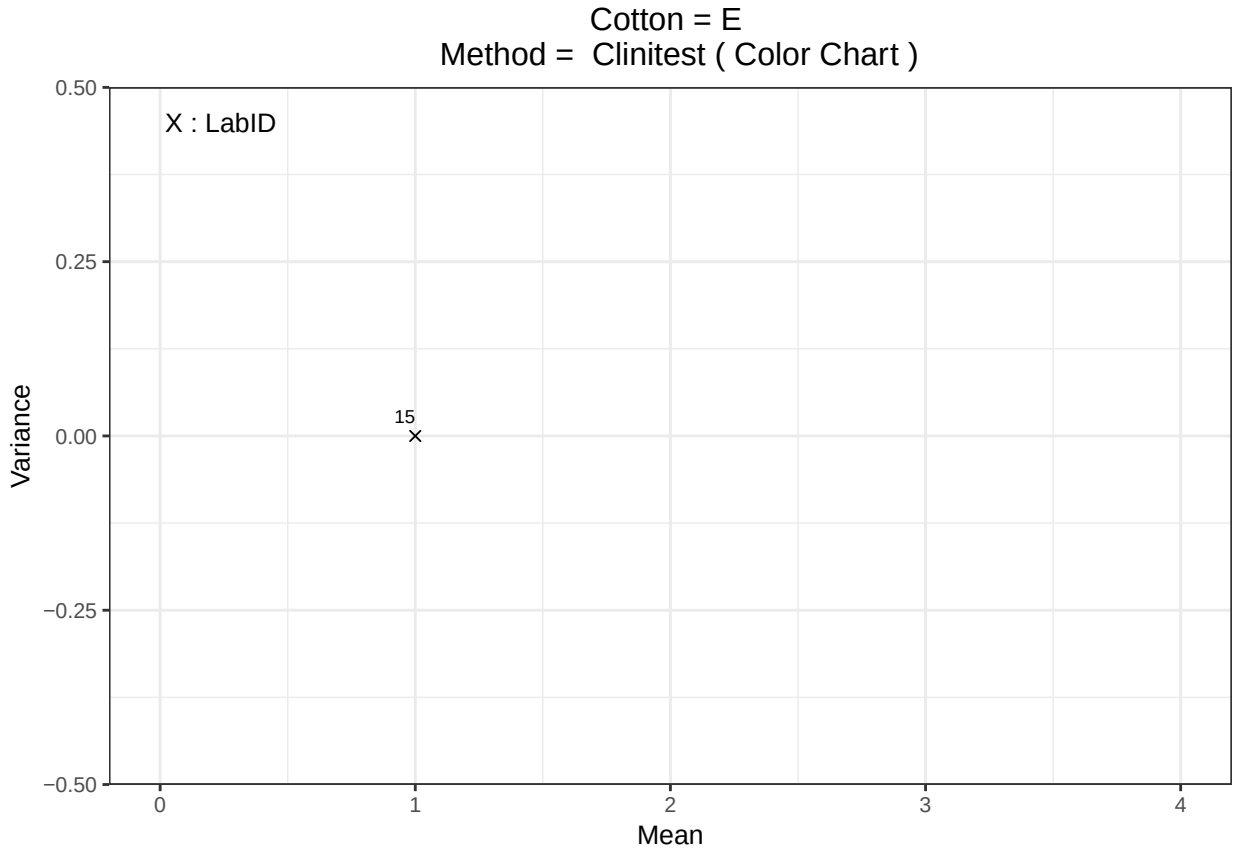

Cotton = D
Method = Quantitative method (Percent)
X : LabID
130
Variance
Mean
0.50
0.25
0.00
−0.25
0.00
0.25
0.50
0.75
1.00

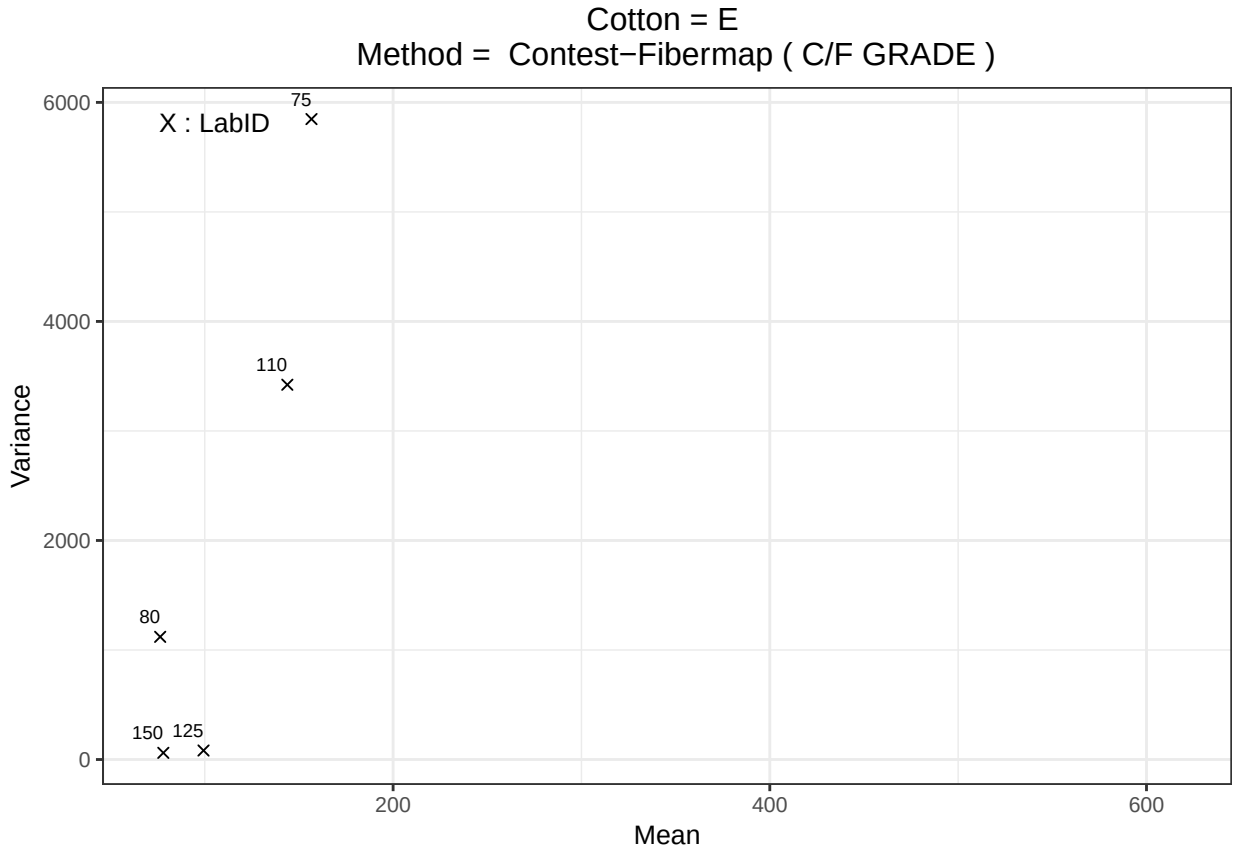

Cotton = D
Method = SCT (Sticky points)
X : LabID
Variance
Mean
300
200
100
0
0
20
40
60
80
50
140
135
25
45
30
35
170
160
180
165
20

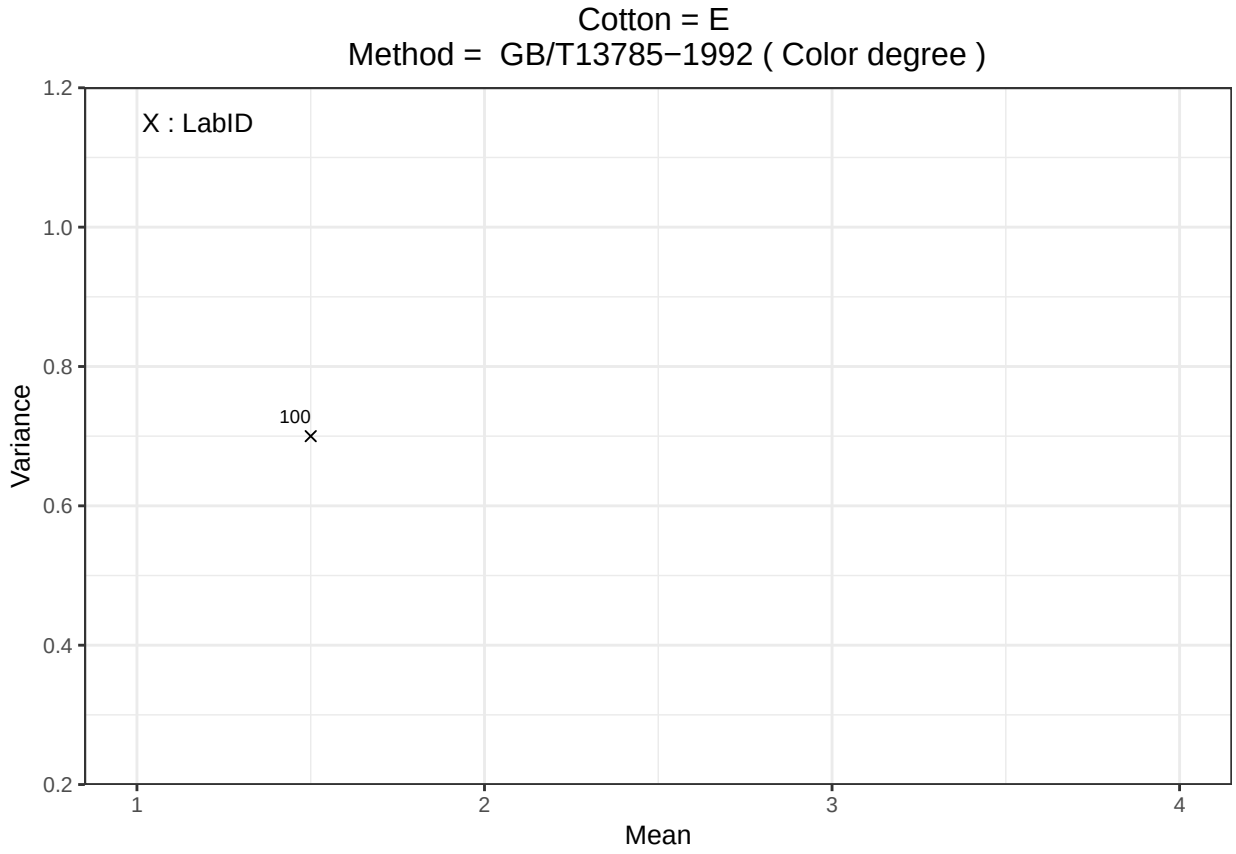

Cotton = D
Method = TDM−A (Sticky points)
X : LabID
1.25
1.00
0.75
0.50
Variance
10
0
2
4
6
Mean

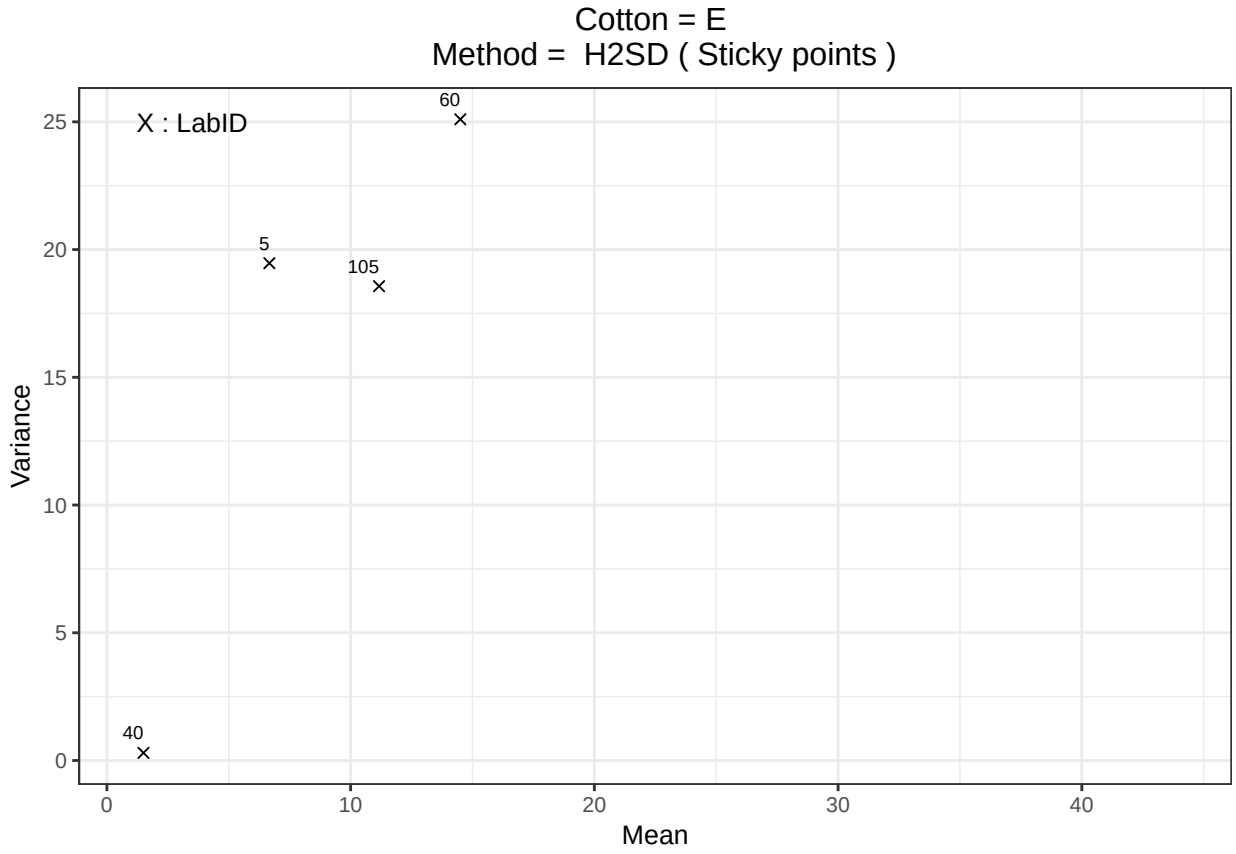
Cotton E : Variance between individual measurements = f(Mean) for all concerned labs

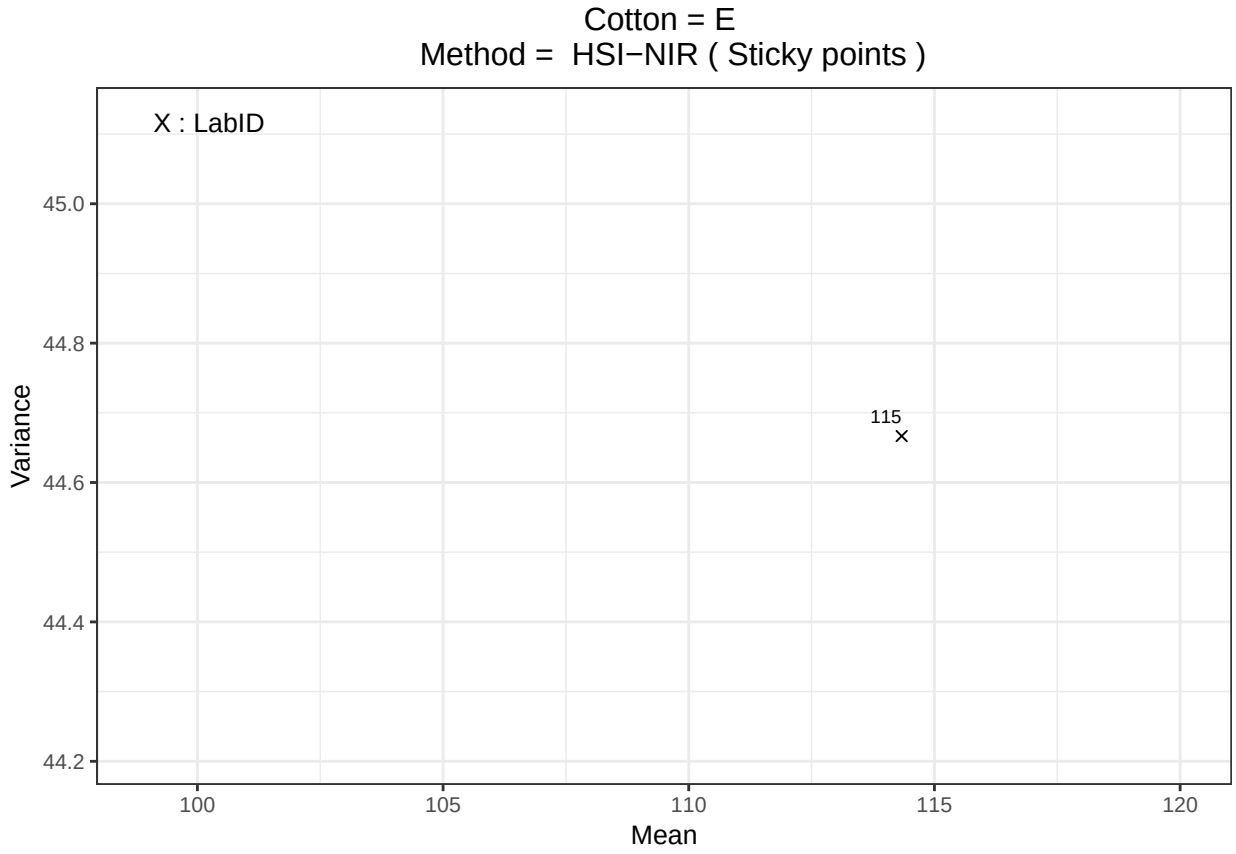


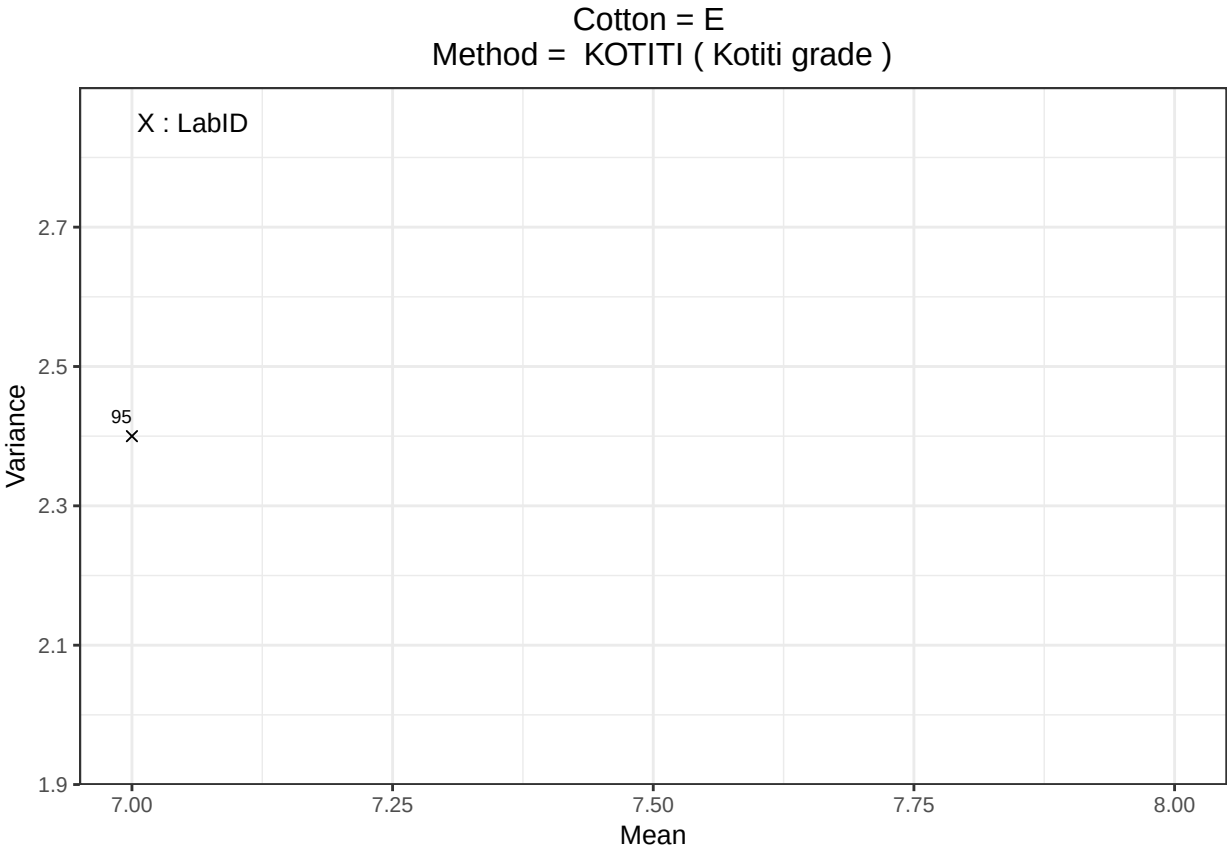

Cotton = E
Method = Clinitest (Color Chart)
X : LabID
15
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
0
1
2
3
4

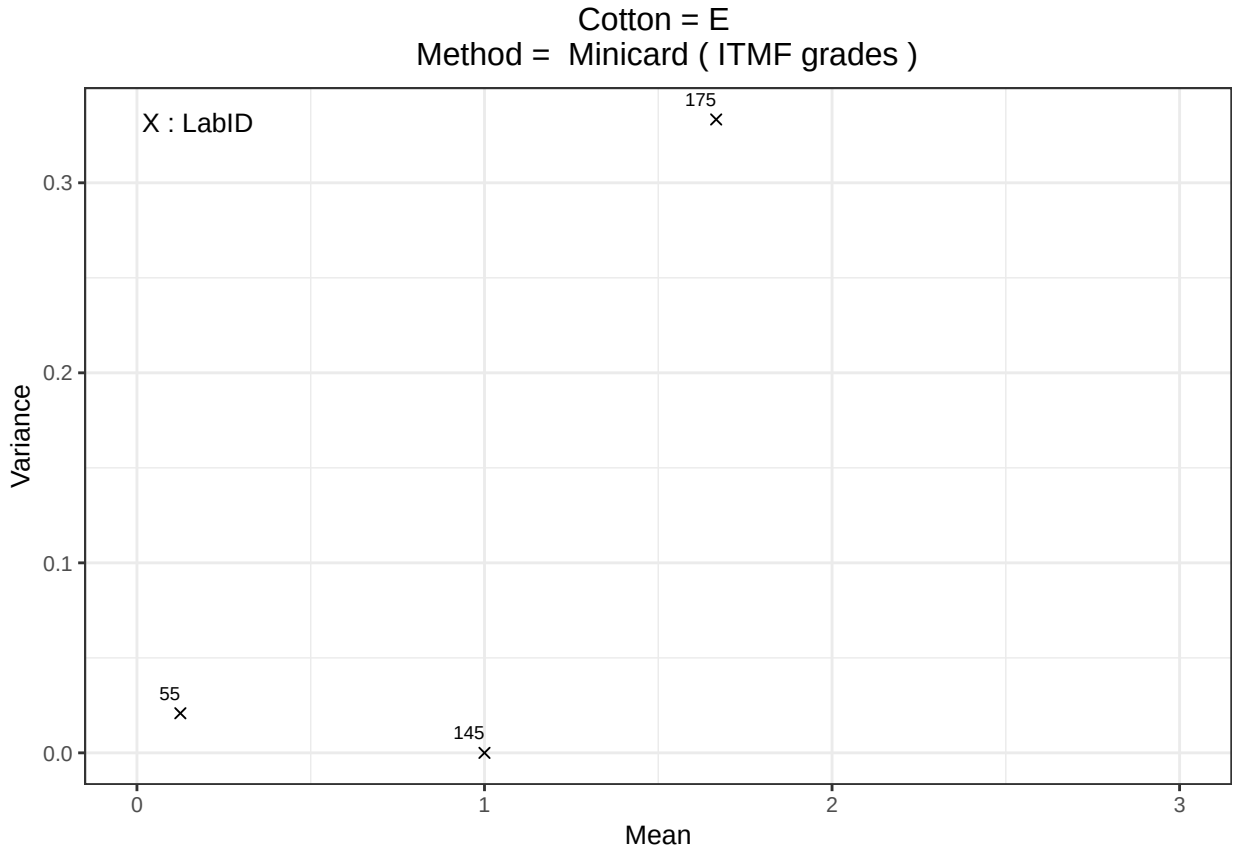

Cotton = E
Method = Contest−Fibermap (C/F GRADE)
X : LabID
75
110
80
150
125
6000
4000
2000
0
Variance
200
400
600
Mean

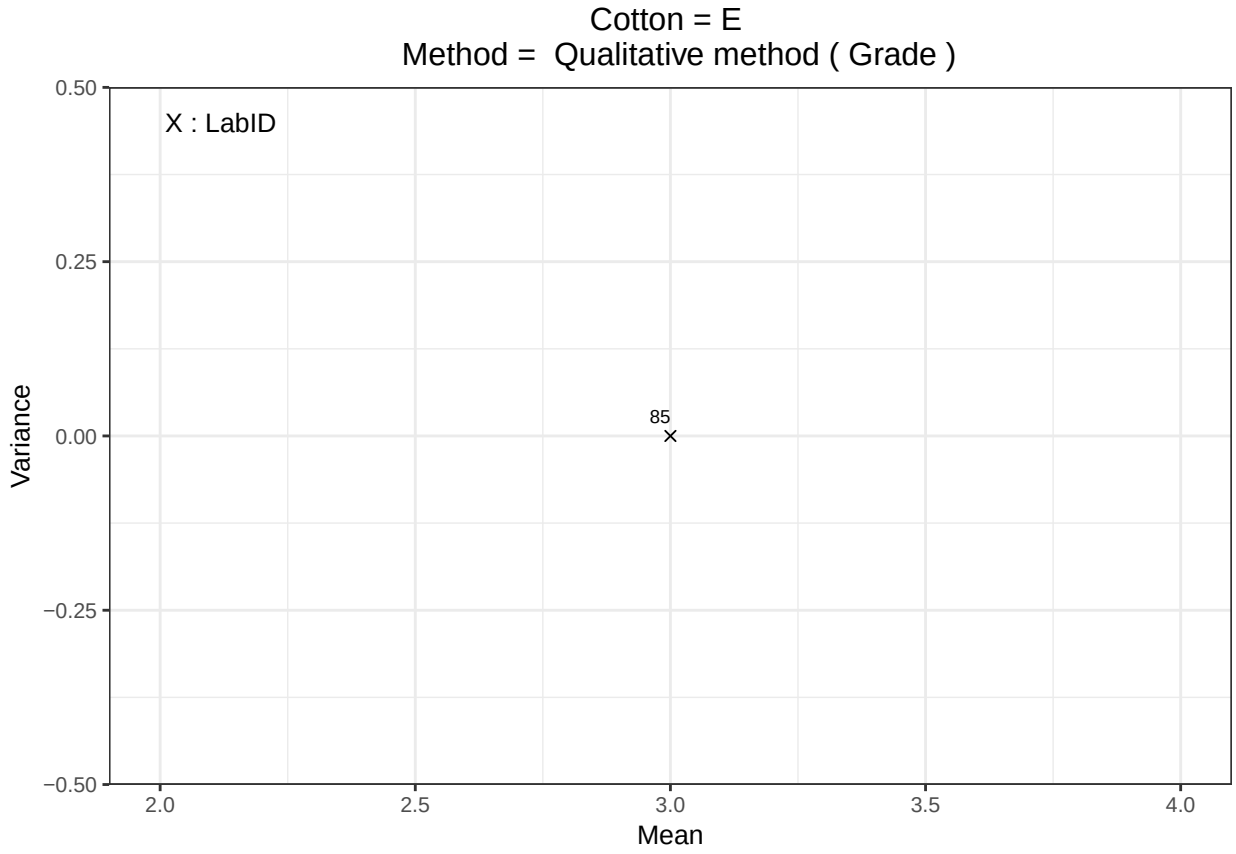

Cotton = E
Method = GB/T13785−1992 (Color degree)
X : LabID
100
Variance
Mean
1.2
1.0
0.8
0.6
0.4
0.2
1
2
3
4

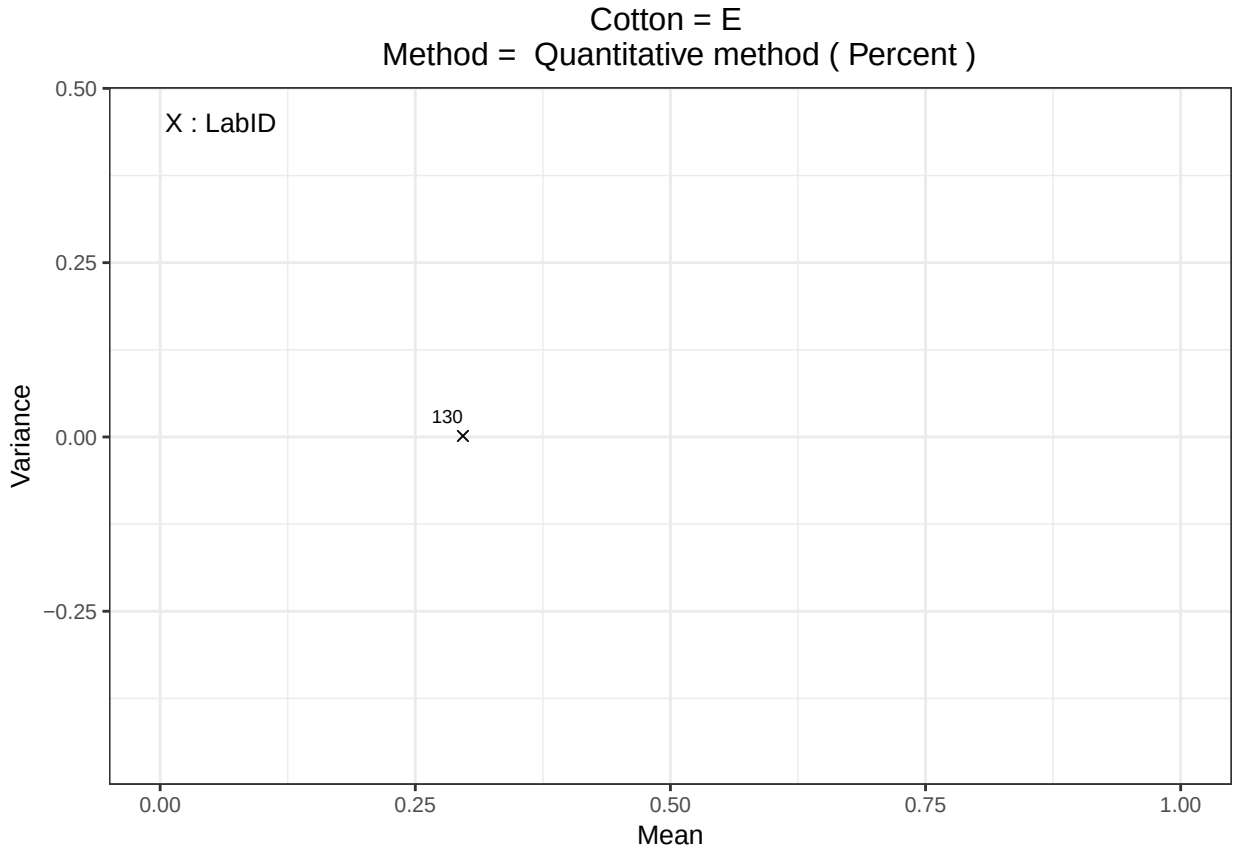

Cotton = E
Method = H2SD (Sticky points)
X : LabID
60
5
105
40
Variance
Mean
0
5
10
15
20
25
0
10
20
30
40

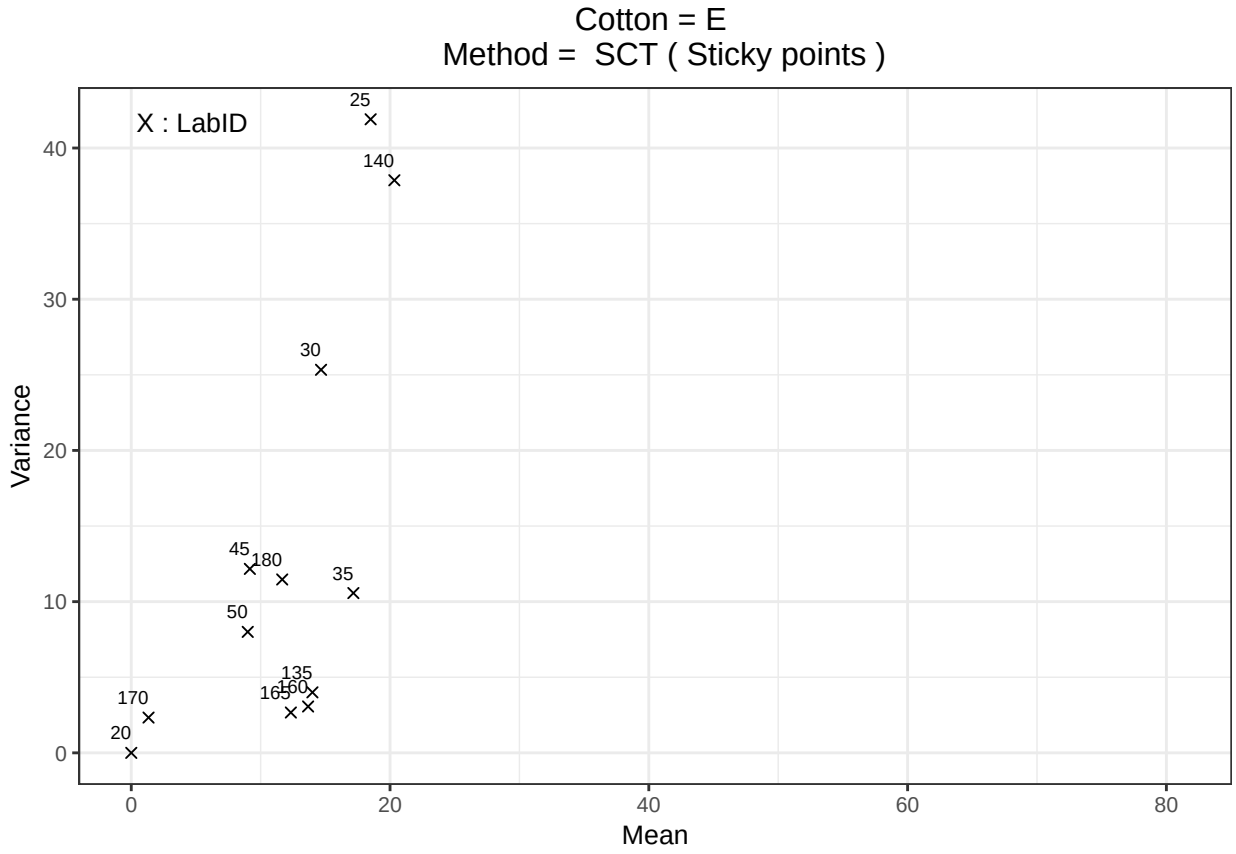

Cotton = E
Method = HSI−NIR (Sticky points)
X : LabID
45.0
44.8
44.6
44.4
44.2
Variance
115
100
105
110
115
120
Mean

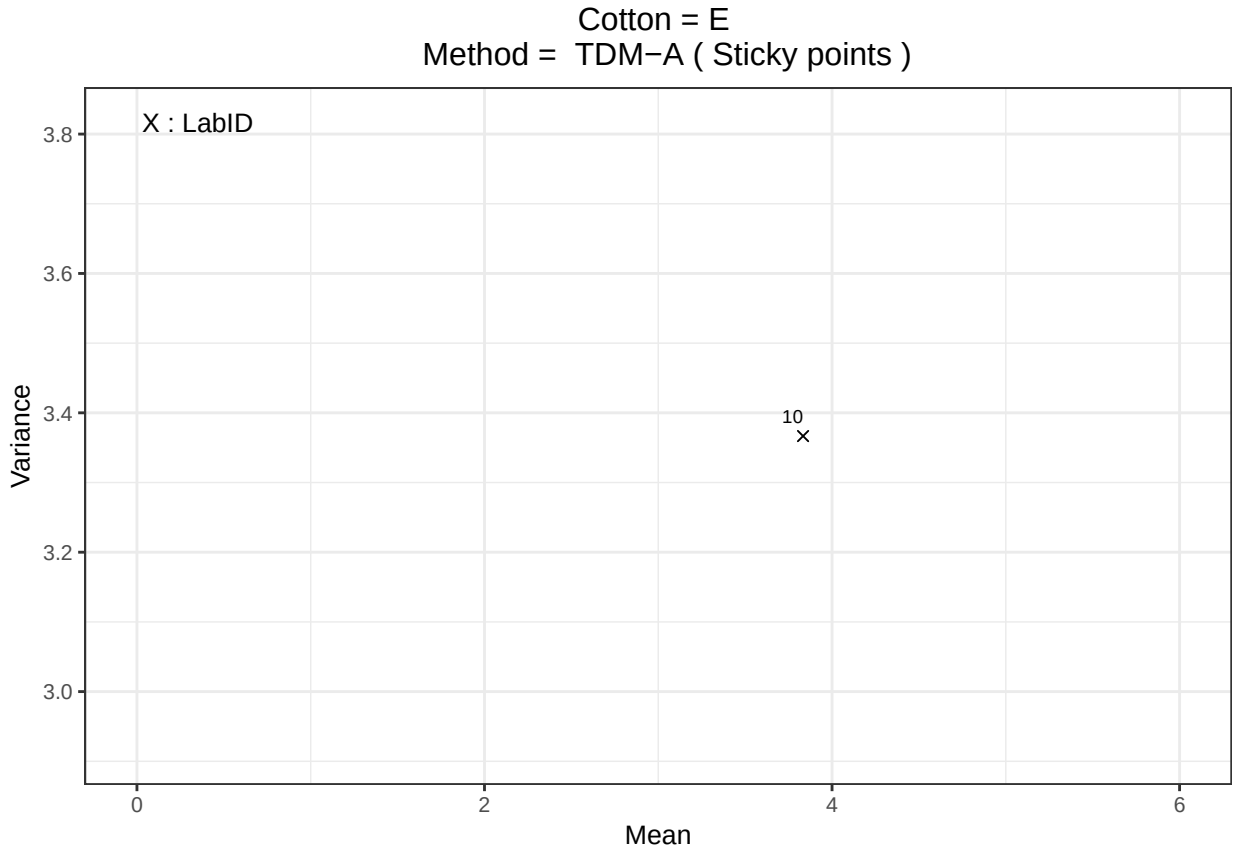

Cotton = E
Method = KOTITI (Kotiti grade)
X : LabID
95
Variance
2.7
2.5
2.3
2.1
1.9
7.00
7.25
7.50
7.75
8.00
Mean


Cotton = E
Method = Minicard (ITMF grades)
X : LabID
175
55
145
Variance
Mean
0.0
0.1
0.2
0.3
0
1
2
3


Cotton = E
Method = Qualitative method (Grade)
X : LabID
85
Variance
Mean
0.50
0.25
0.00
−0.25
−0.50
2.0
2.5
3.0
3.5
4.0

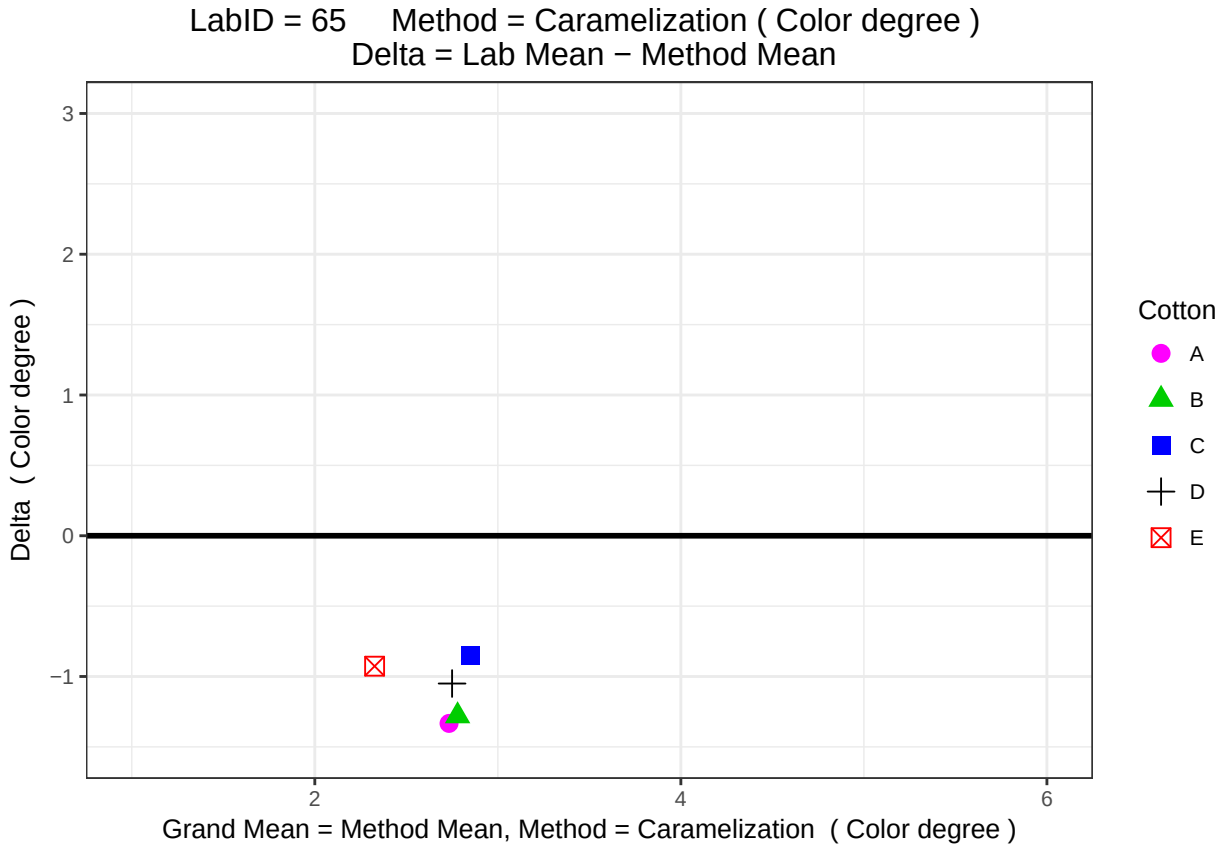

Cotton = E
Method = Quantitative method (Percent)
X : LabID
130
Variance
Mean
0.50
0.25
0.00
−0.25
0.00
0.25
0.50
0.75
1.00


Cotton = E
Method = SCT (Sticky points)
X : LabID
25
140
30
45
180
35
50
135
160
165
170
20
Variance
Mean
0
10
20
30
40
0
20
40
60
80


Cotton = E
Method = TDM−A (Sticky points)
X : LabID
Variance
Mean
3.8
3.6
3.4
3.2
3.0
0
2
4
6
10

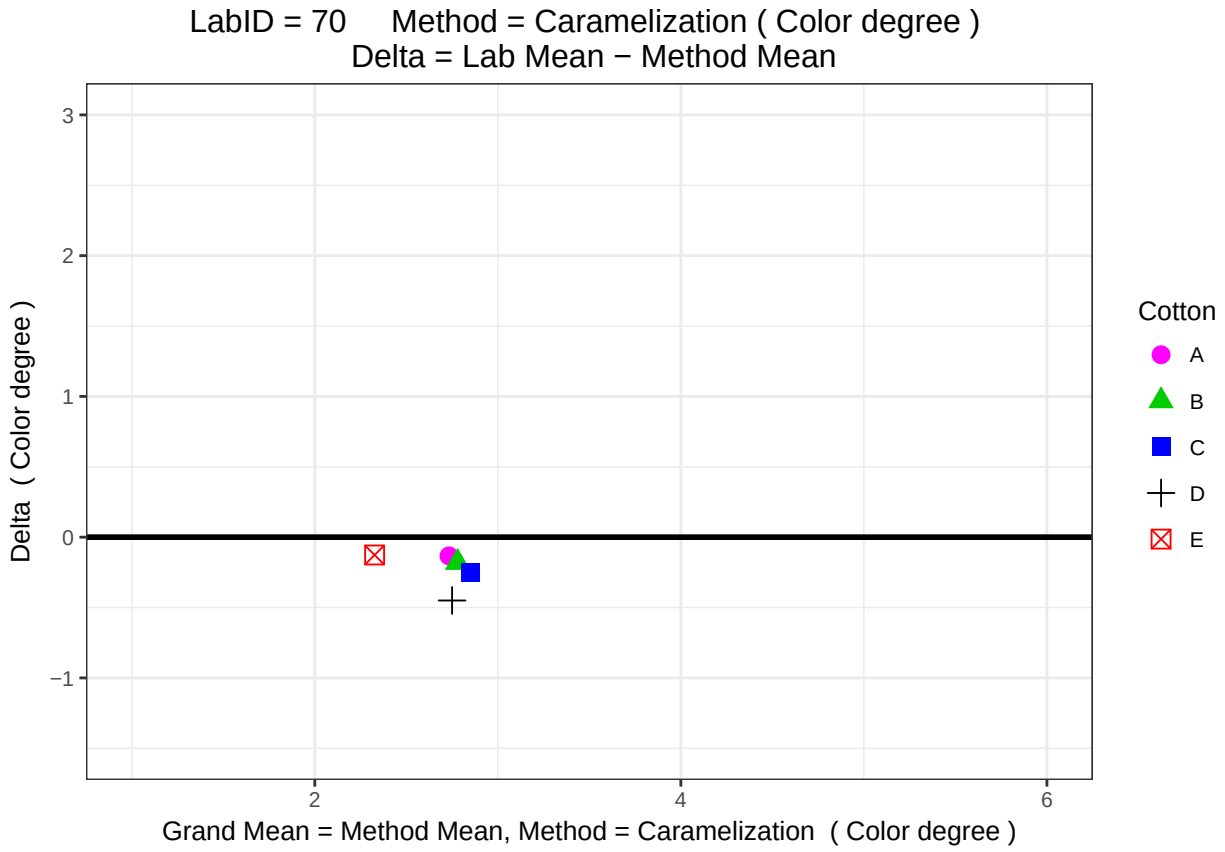
CSITC type charts: distance of Lab readings to the Grand Mean by Method and by LabID [6]

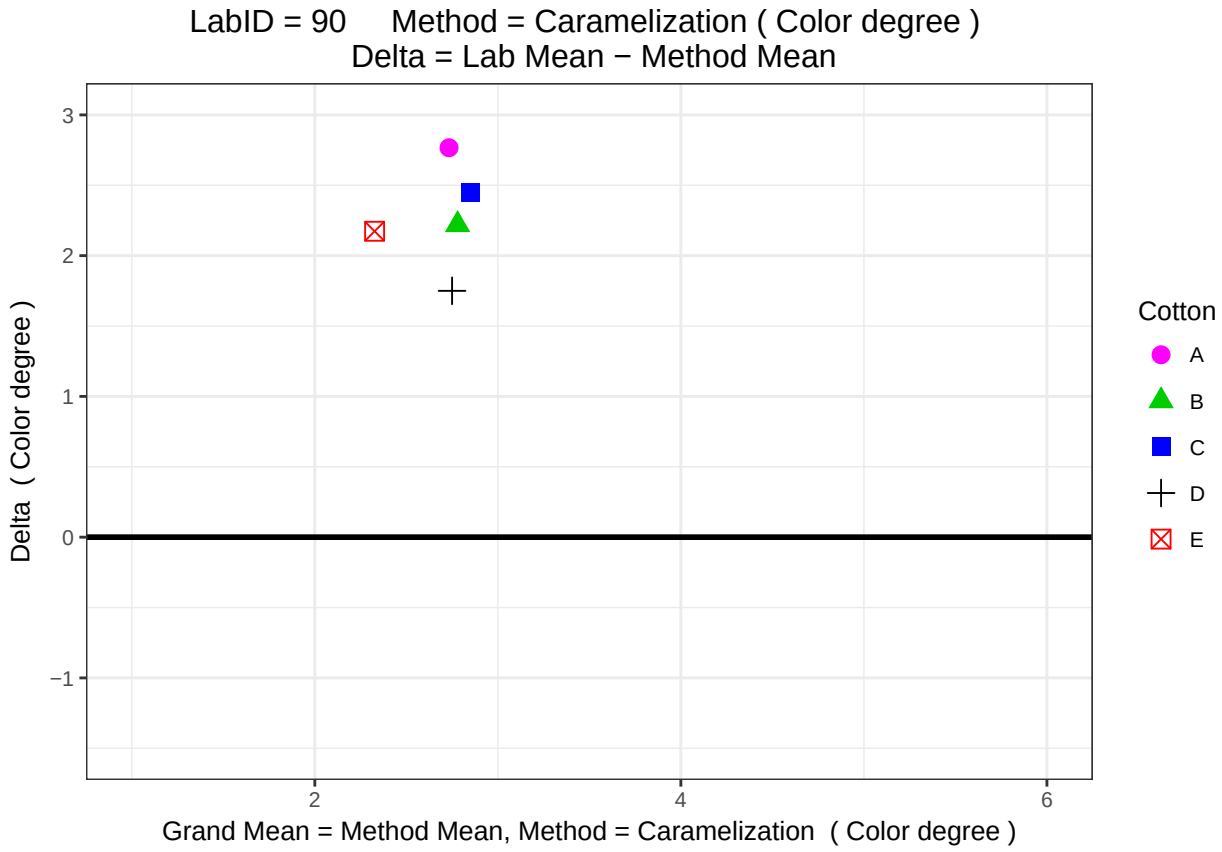
CSITC type chart for Method Caramelization

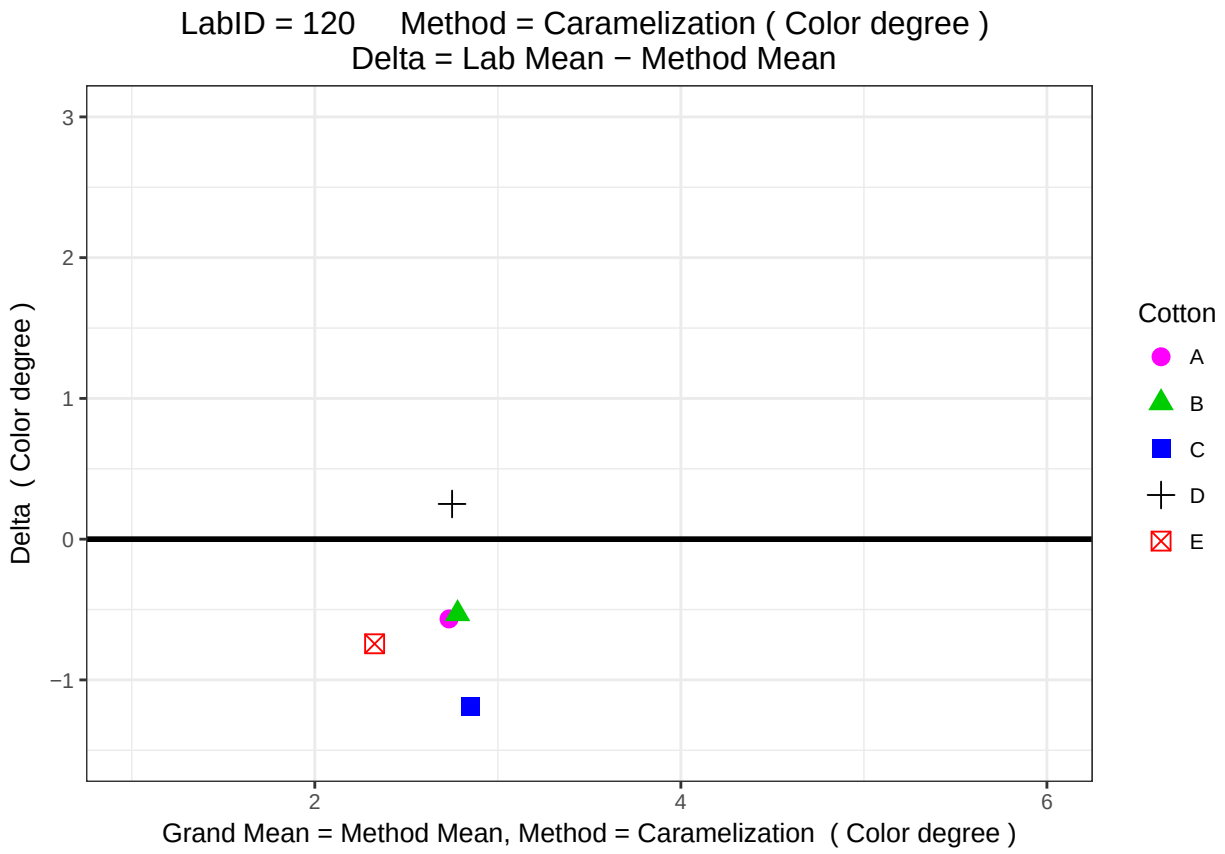


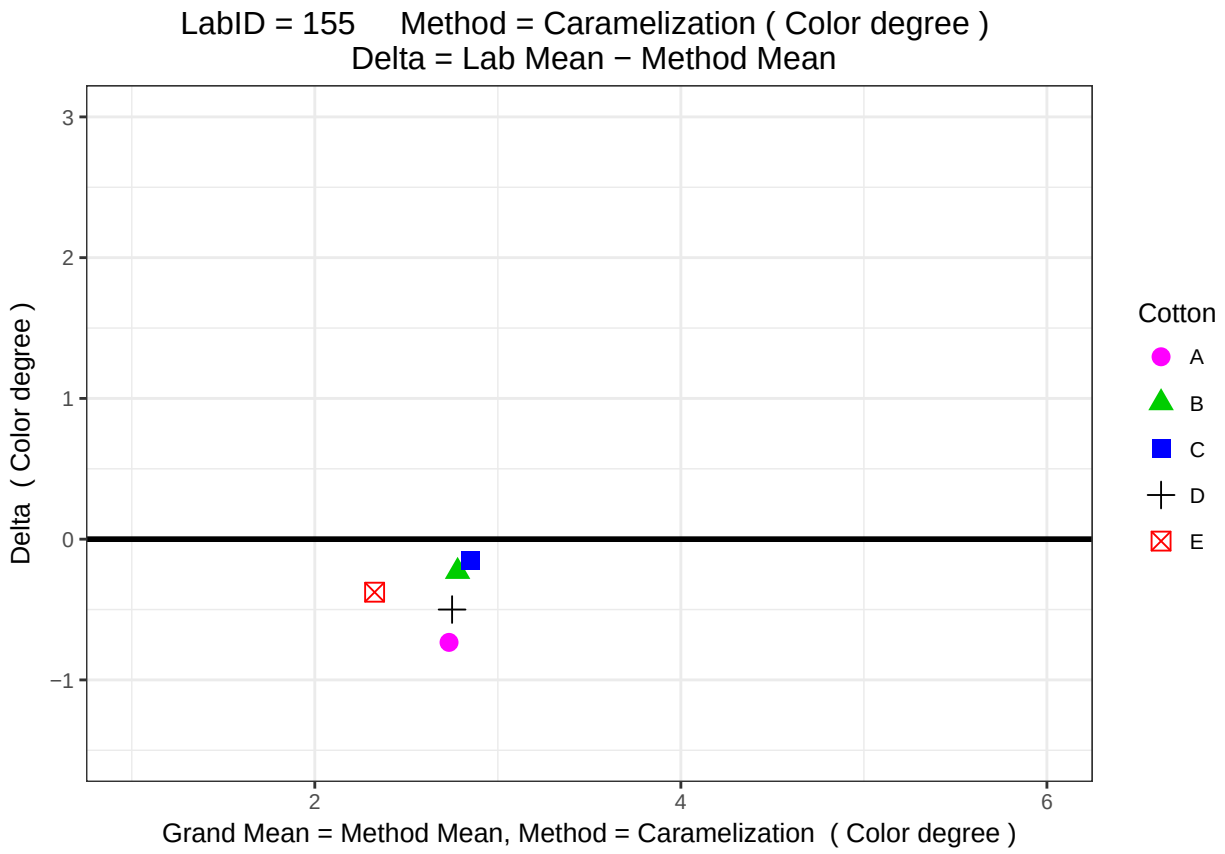
[6]Footnote

* GMean = Grand Mean of all laboratory means, calculated by Method.
* Chart abscissa axis is given in the original individual readings scale.

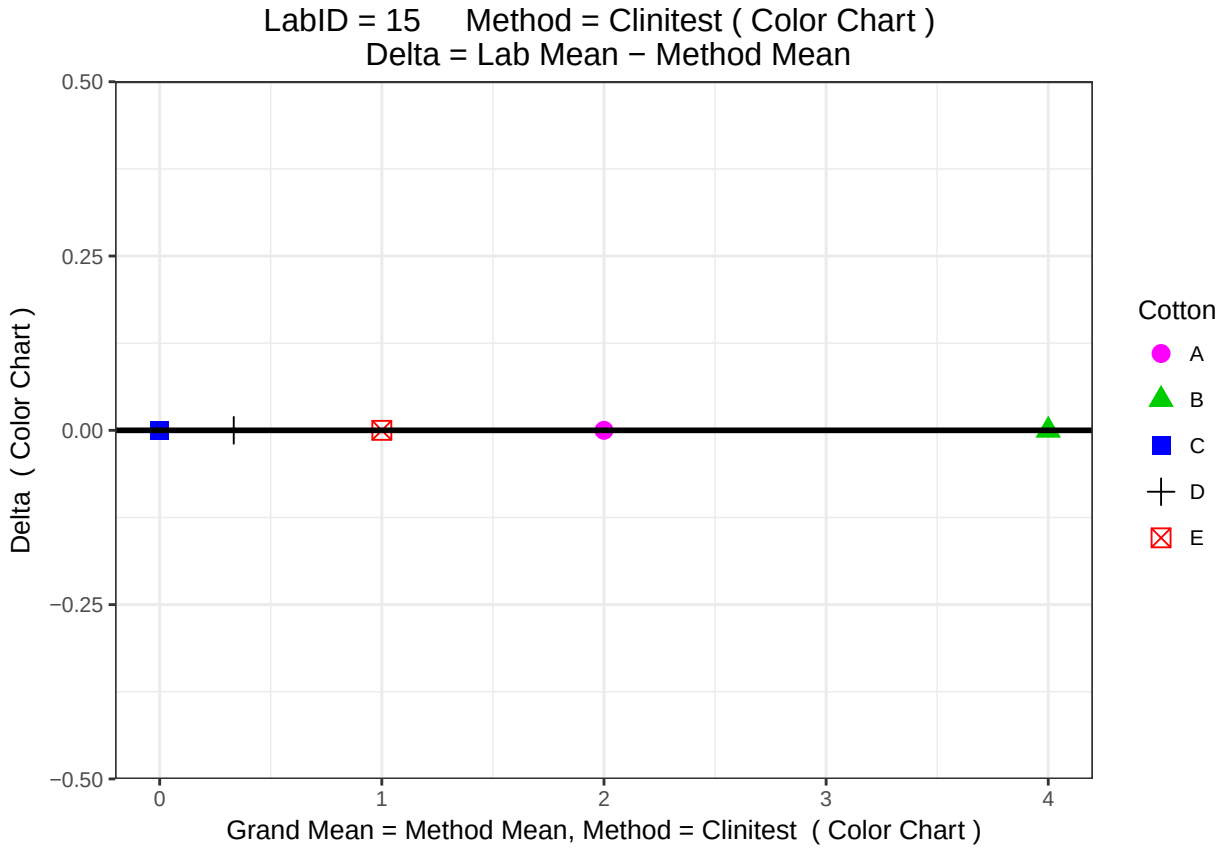

LabID = 70 Method = Caramelization (Color degree)
Delta = Lab Mean − Method Mean
Delta (Color degree)
3
2
1
0
−1
2
4
6
Grand Mean = Method Mean, Method = Caramelization (Color degree)
Cotton
A
B
C
D
E


LabID = 90 Method = Caramelization (Color degree)
Delta = Lab Mean − Method Mean
Delta (Color degree)
3
2
1
0
−1
2
4
6
Grand Mean = Method Mean, Method = Caramelization (Color degree)
Cotton
A
B
C
D
E

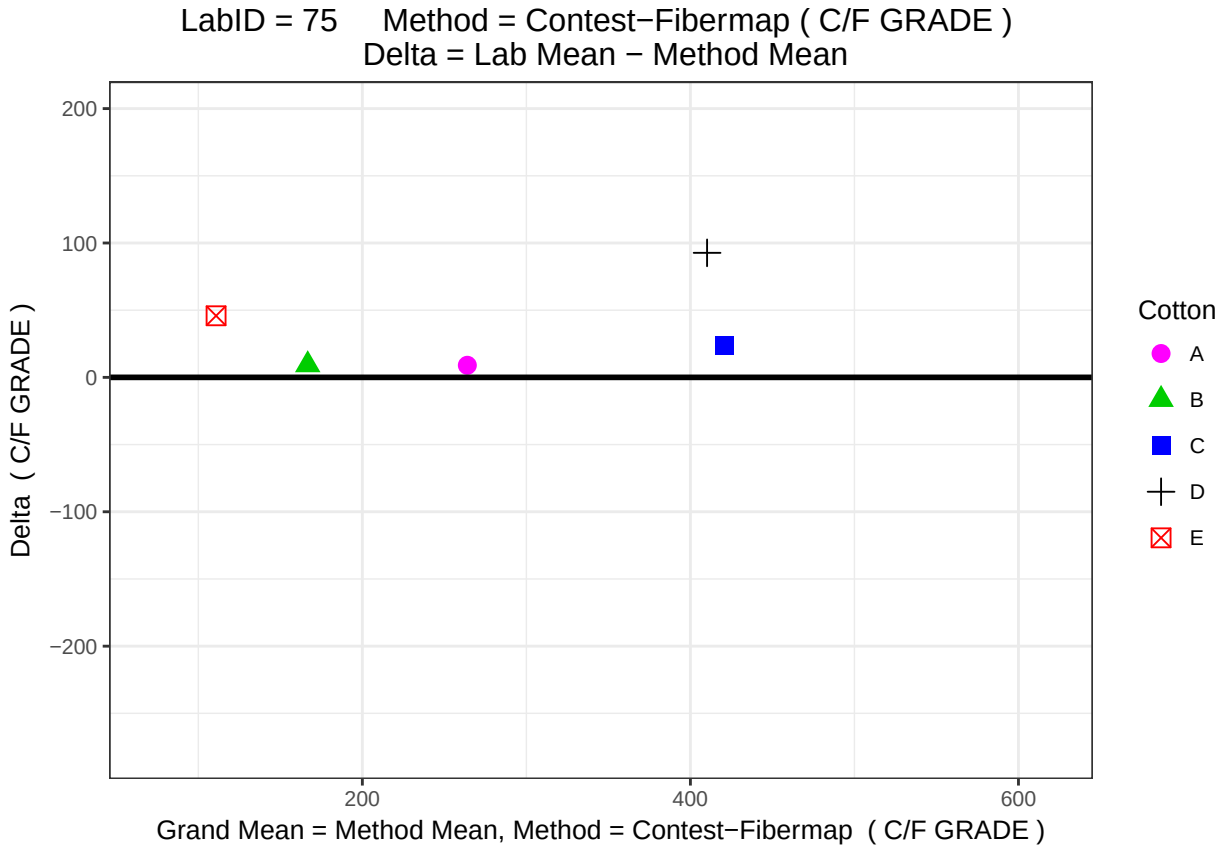

LabID = 120 Method = Caramelization (Color degree)
Delta = Lab Mean − Method Mean
Delta (Color degree)
3
2
1
0
−1
2
4
6
Grand Mean = Method Mean, Method = Caramelization (Color degree)
Cotton
A
B
C
D
E

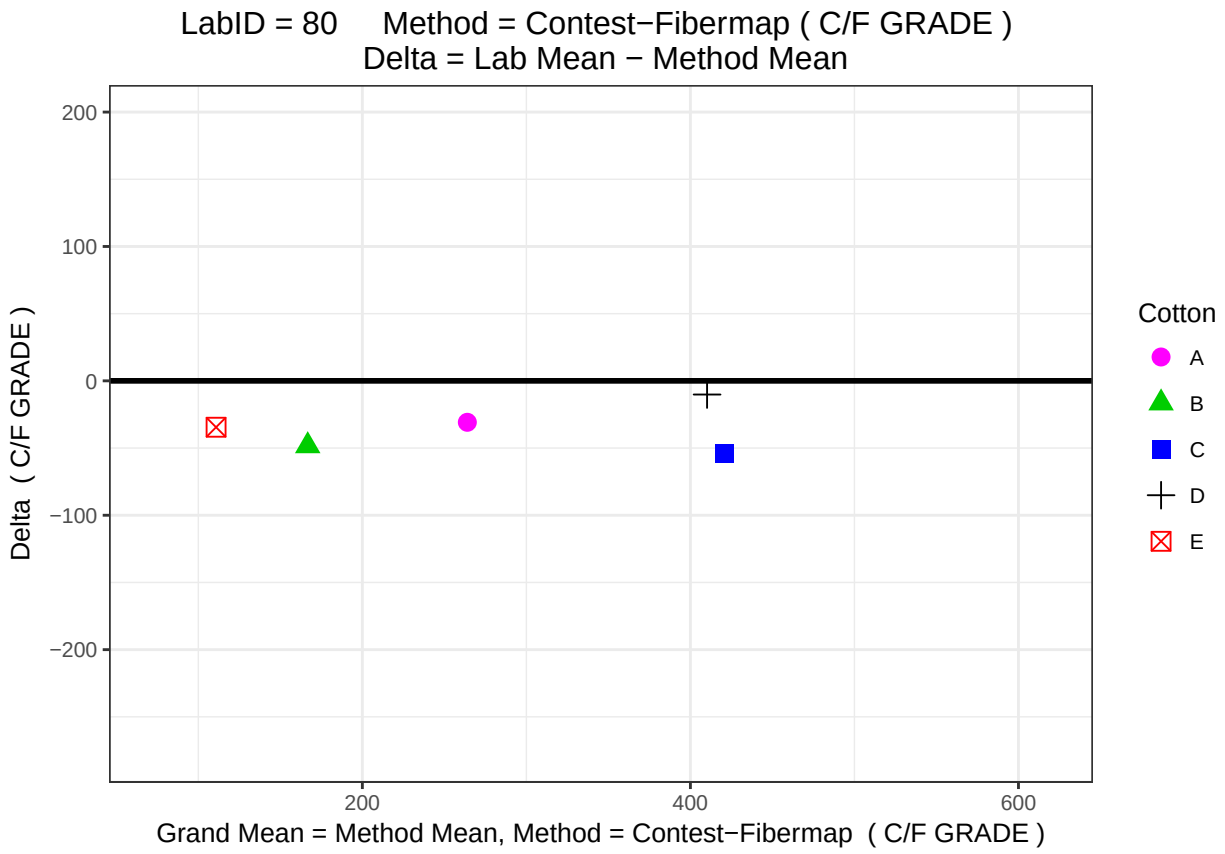

LabID = 155 Method = Caramelization (Color degree)
Delta = Lab Mean − Method Mean
Delta (Color degree)
3
2
1
0
−1
2
4
6
Grand Mean = Method Mean, Method = Caramelization (Color degree)
Cotton
A
B
C
D
E

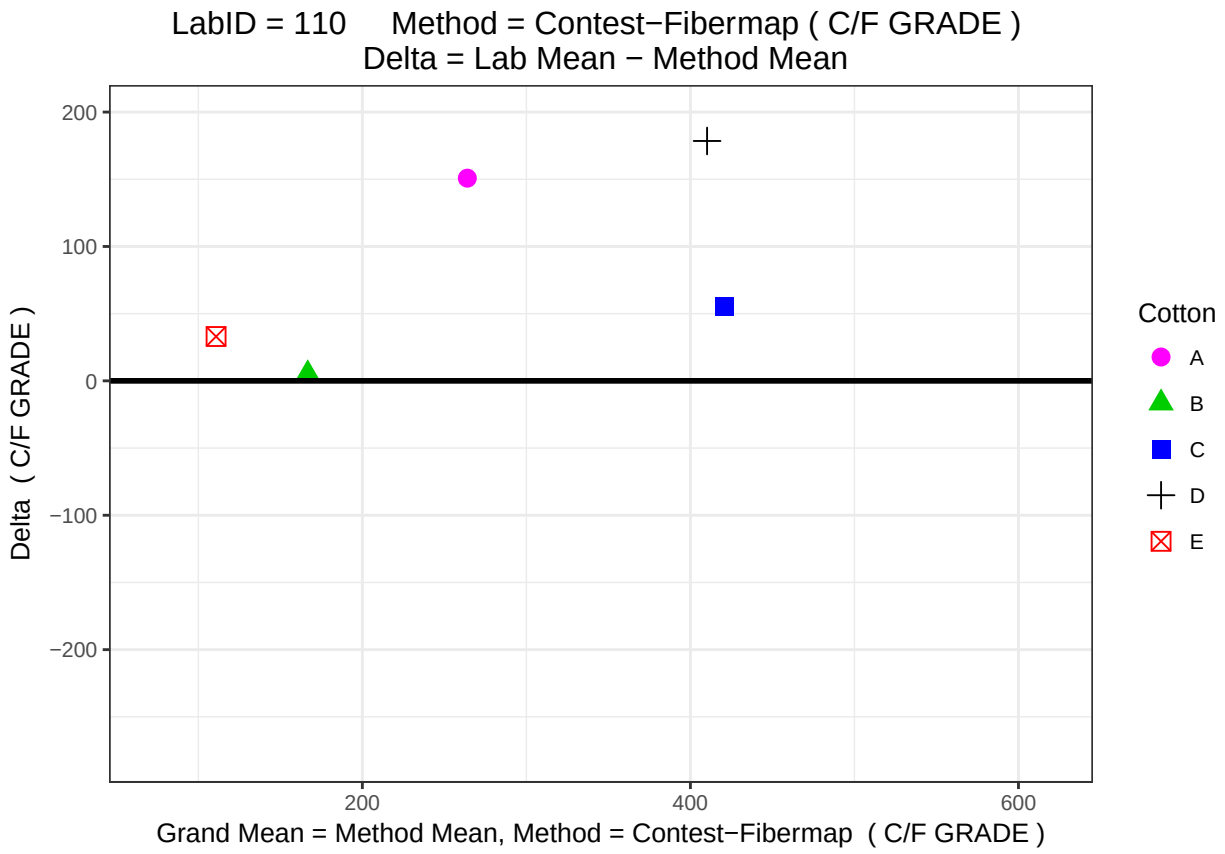
CSITC type chart for Method Clinitest

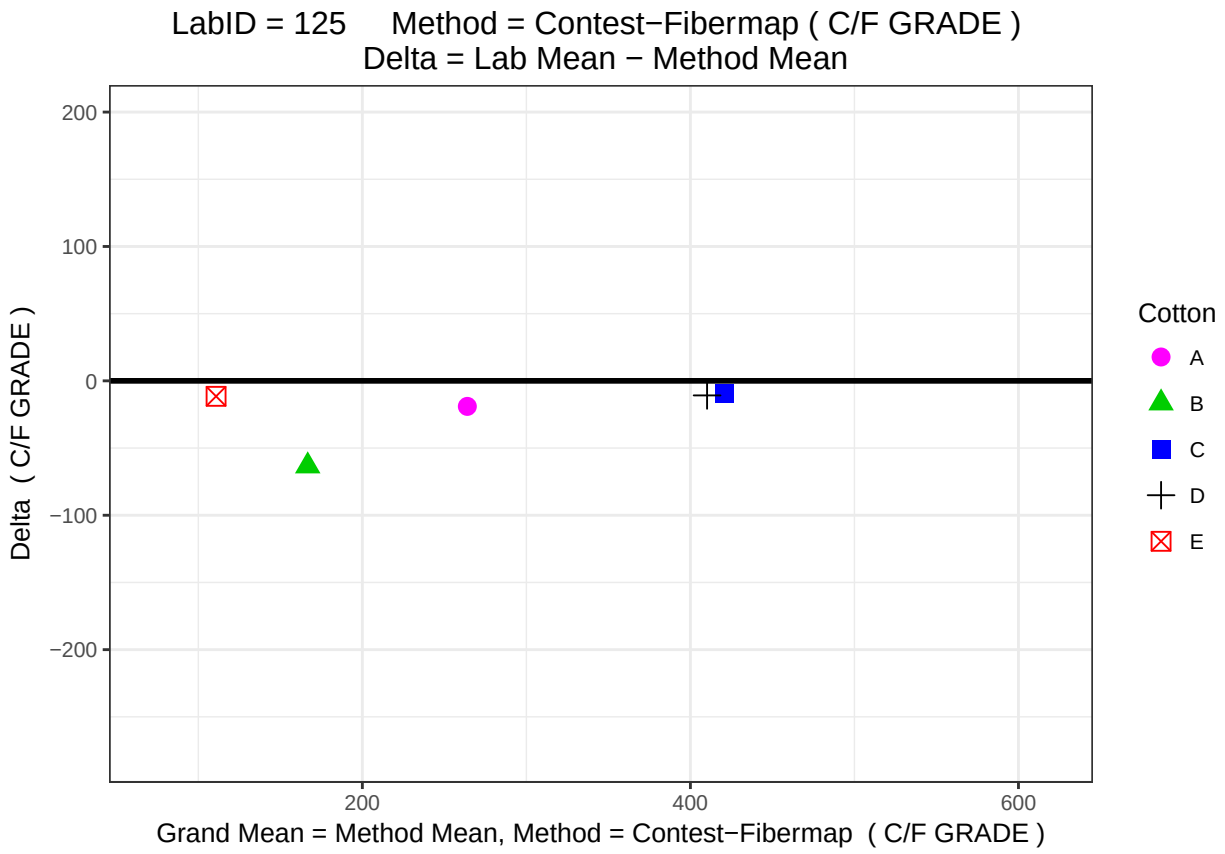


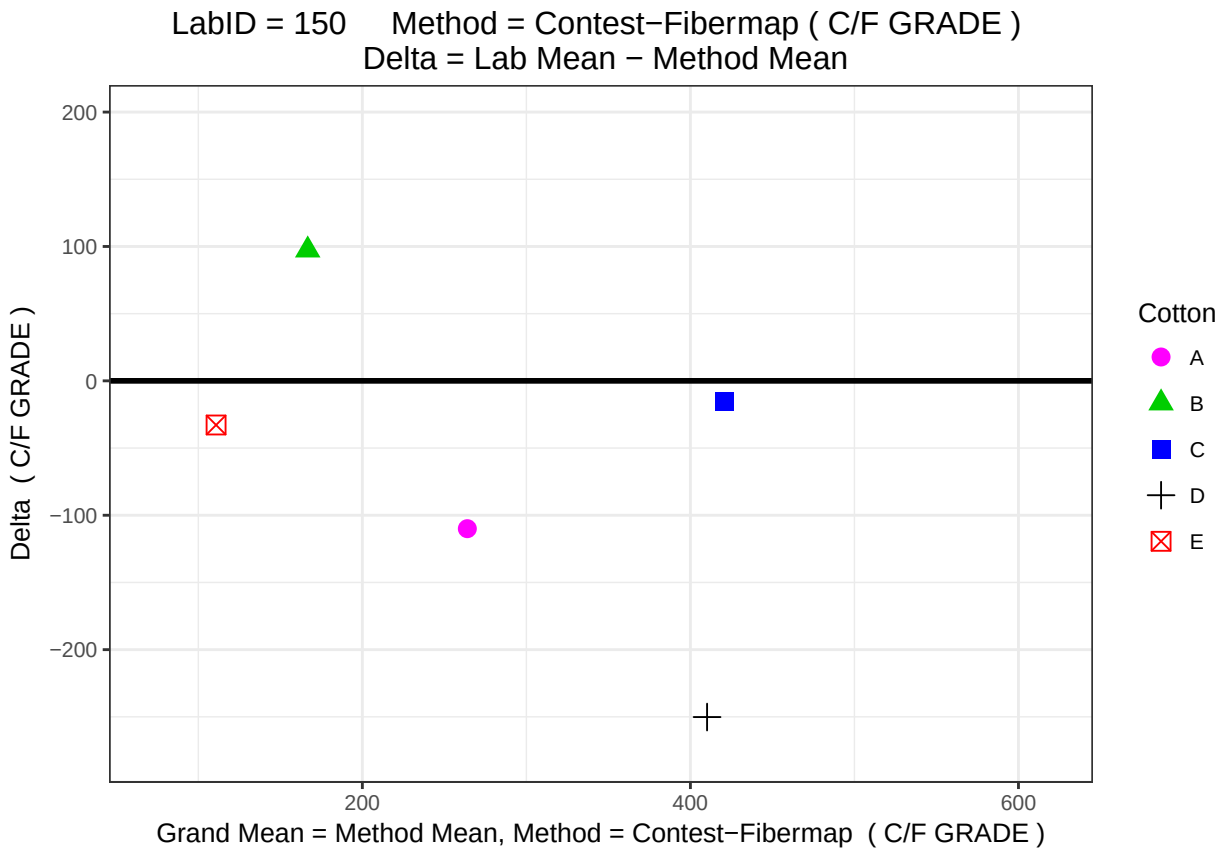
CSITC type chart for Method Contest-Fibermap



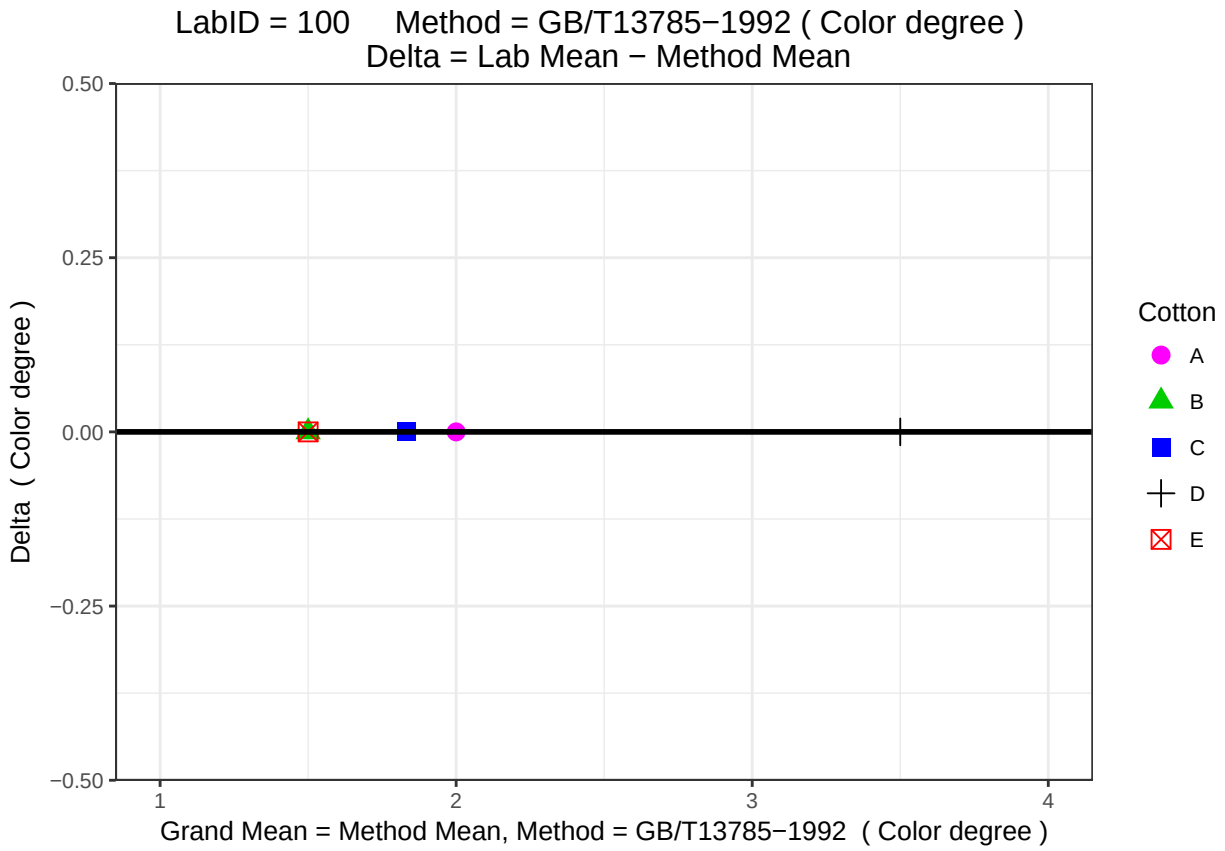

LabID = 80 Method = Contest−Fibermap (C/F GRADE)
Delta = Lab Mean − Method Mean
Delta (C/F GRADE)
200
100
0
−100
−200
200
400
600
Grand Mean = Method Mean, Method = Contest−Fibermap (C/F GRADE)
Cotton
A
B
C
D
E


LabID = 110 Method = Contest−Fibermap (C/F GRADE)
Delta = Lab Mean − Method Mean
Delta (C/F GRADE)
200
100
0
−100
−200
200
400
600
Grand Mean = Method Mean, Method = Contest−Fibermap (C/F GRADE)
Cotton
A
B
C
D
E

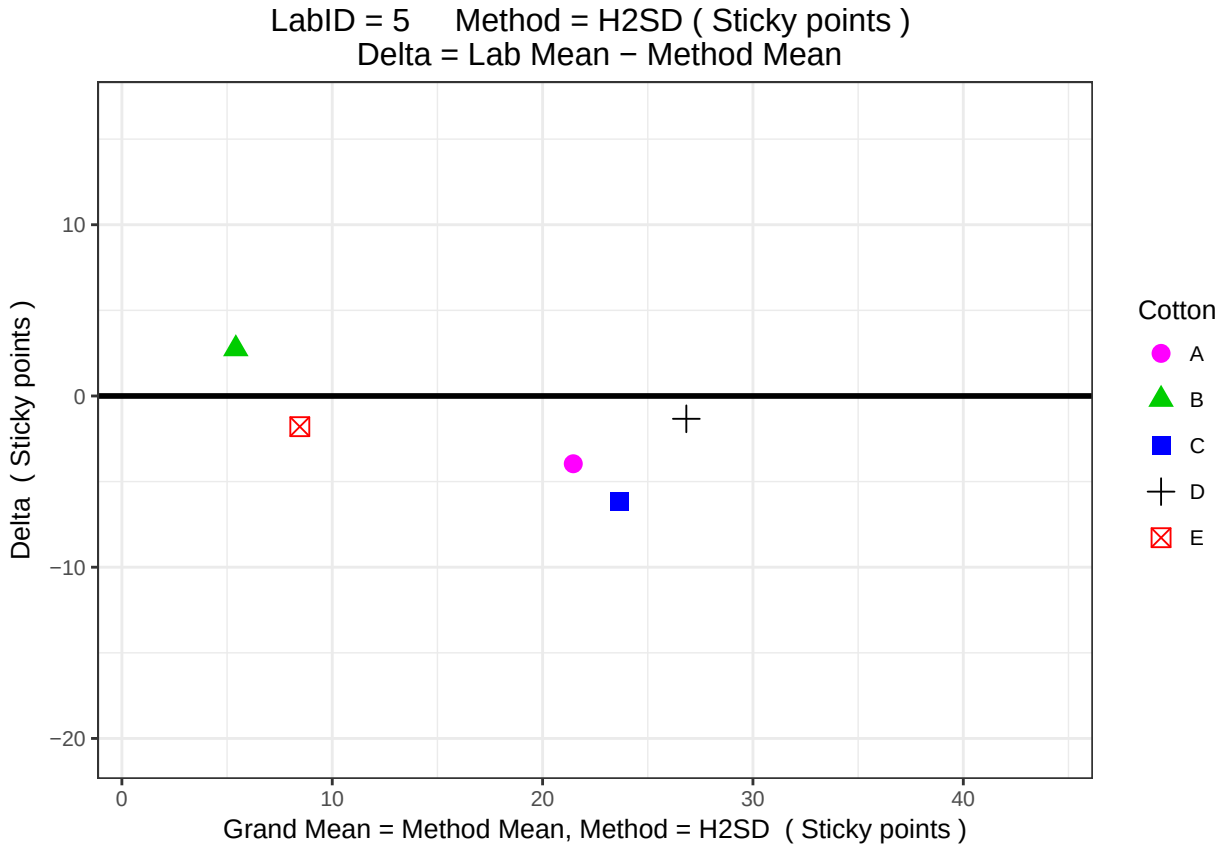

LabID = 125 Method = Contest−Fibermap (C/F GRADE)
Delta = Lab Mean − Method Mean
Delta (C/F GRADE)
200
100
0
−100
−200
200
400
600
Grand Mean = Method Mean, Method = Contest−Fibermap (C/F GRADE)
Cotton
A
B
C
D
E

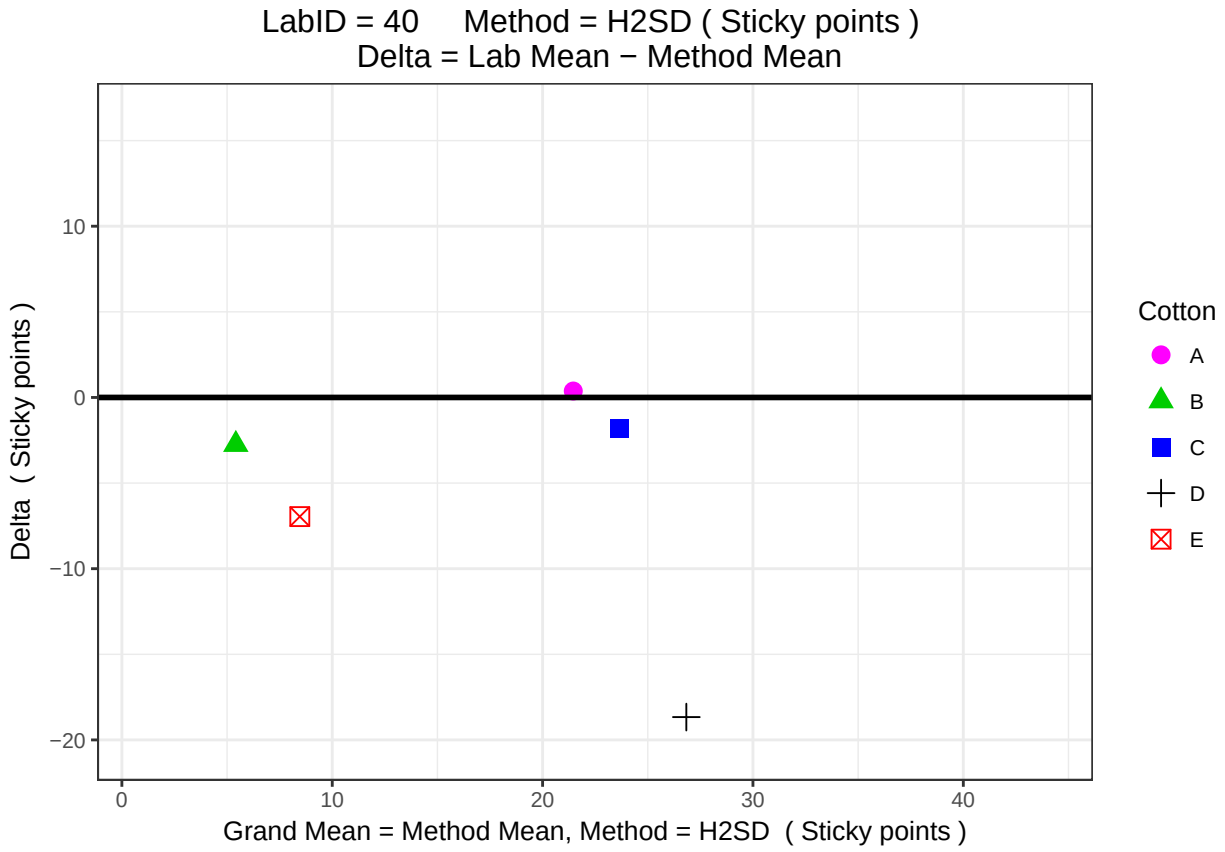

LabID = 150 Method = Contest−Fibermap (C/F GRADE)
Delta = Lab Mean − Method Mean
Delta (C/F GRADE)
200
100
0
−100
−200
200
400
600
Grand Mean = Method Mean, Method = Contest−Fibermap (C/F GRADE)
Cotton
A
B
C
D
E

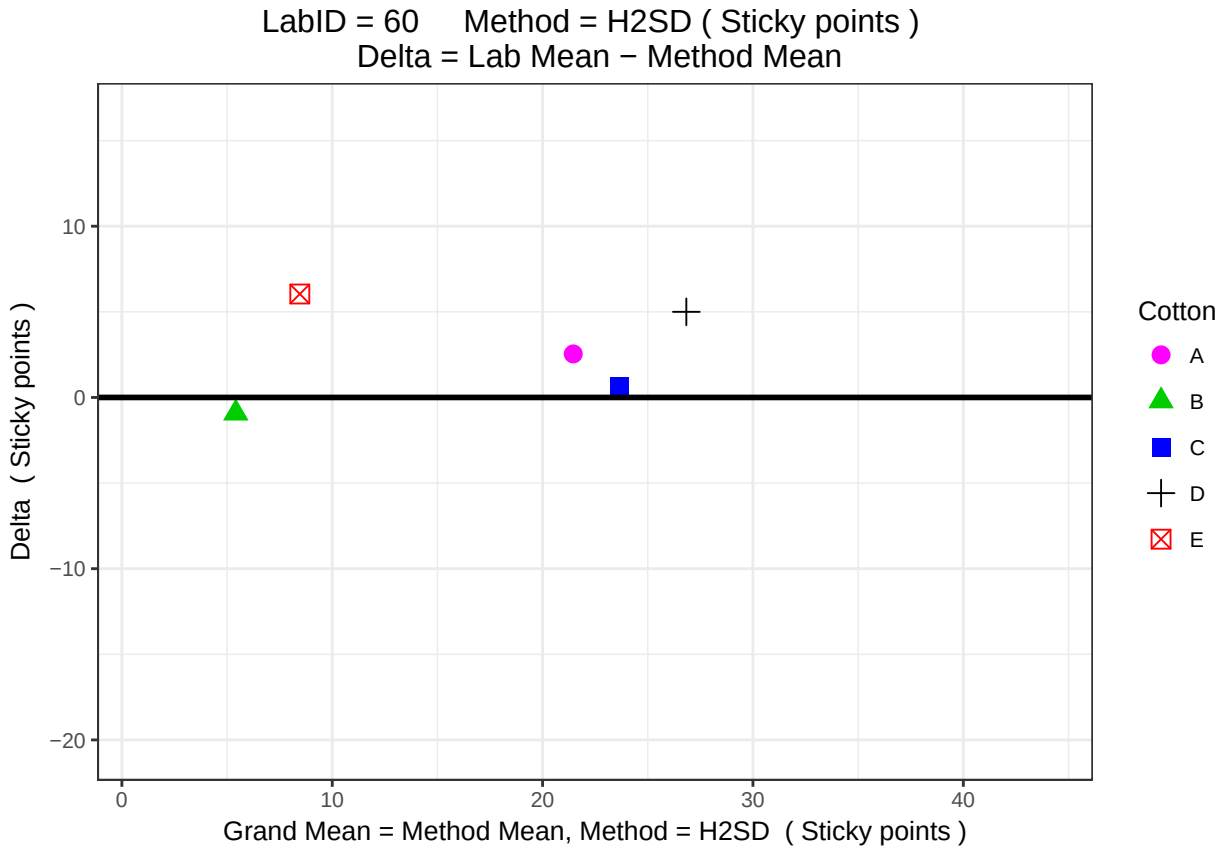
CSITC type chart for Method GB/T13785-1992

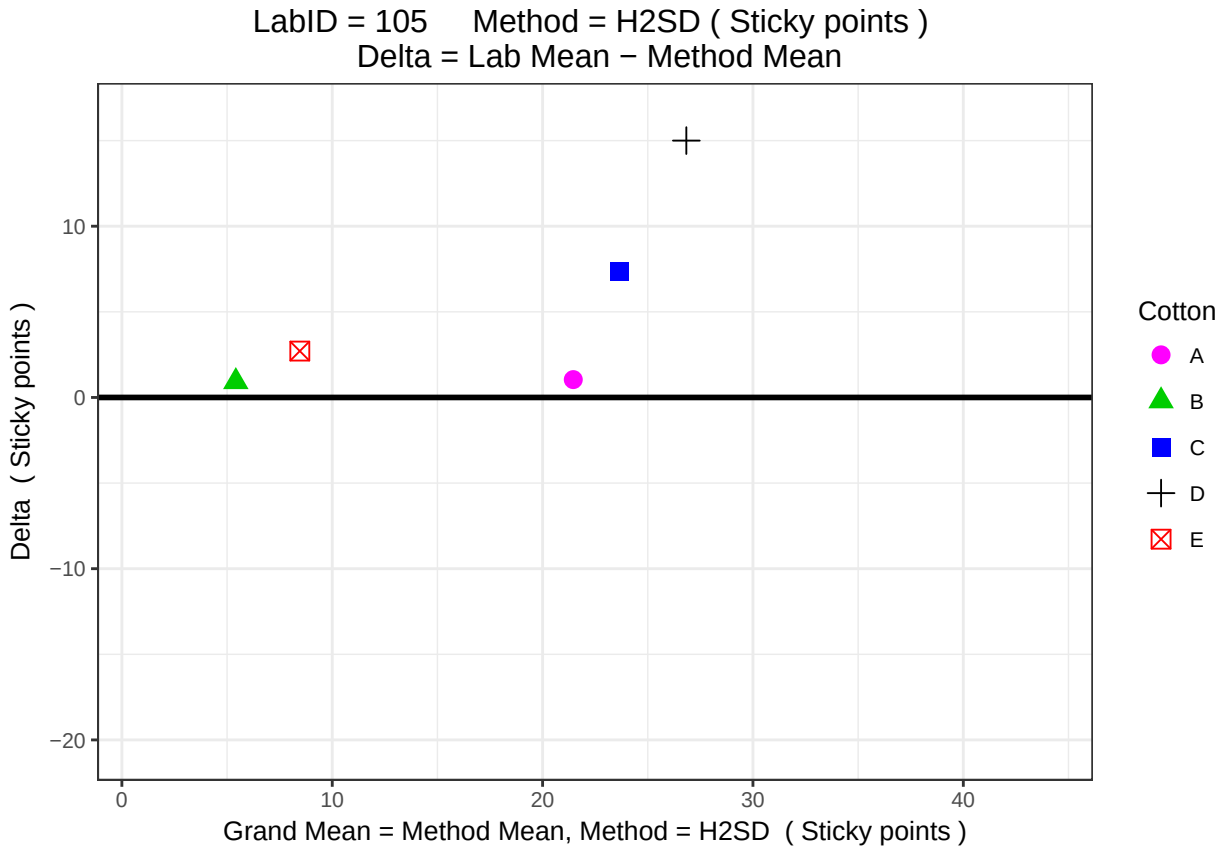


CSITC type chart for Method H2SD

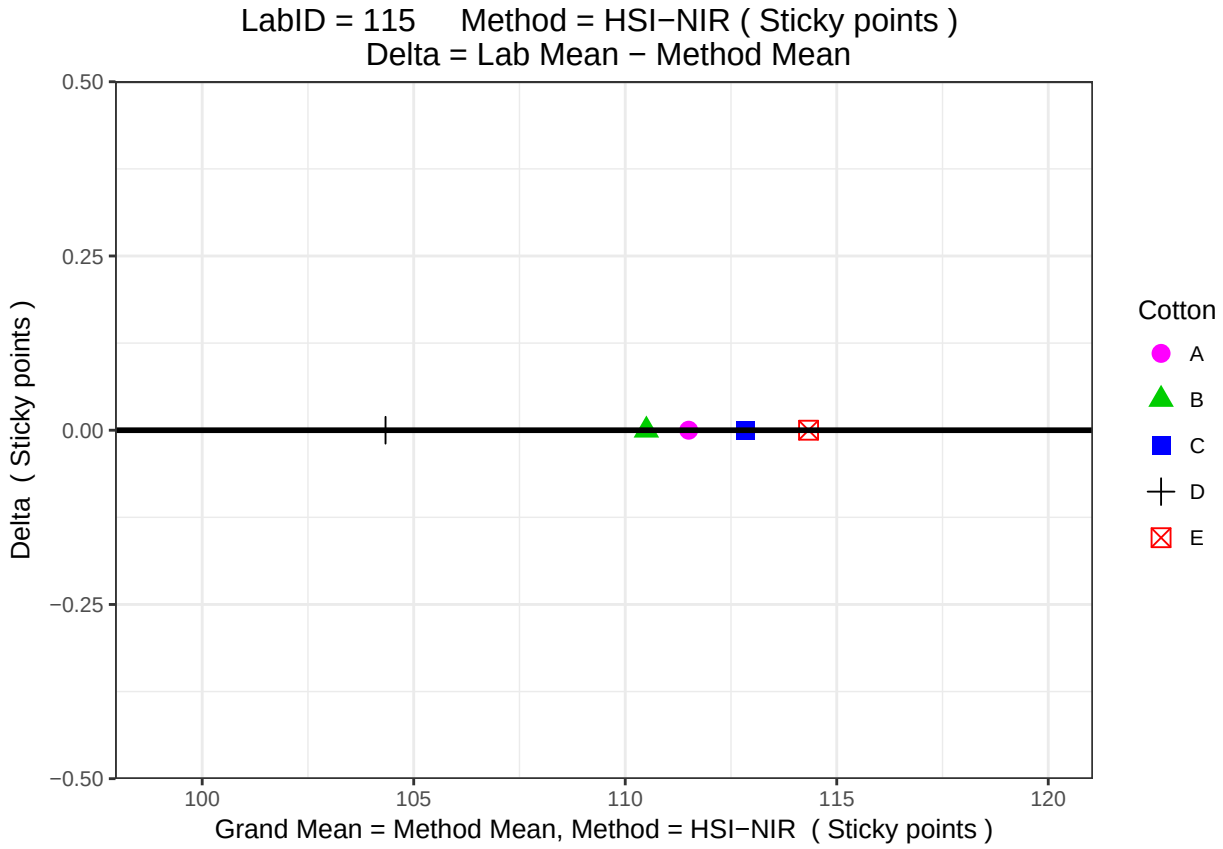



LabID = 40 Method = H2SD (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
10
0
−10
−20
0
10
20
30
40
Grand Mean = Method Mean, Method = H2SD (Sticky points)
Cotton
A
B
C
D
E

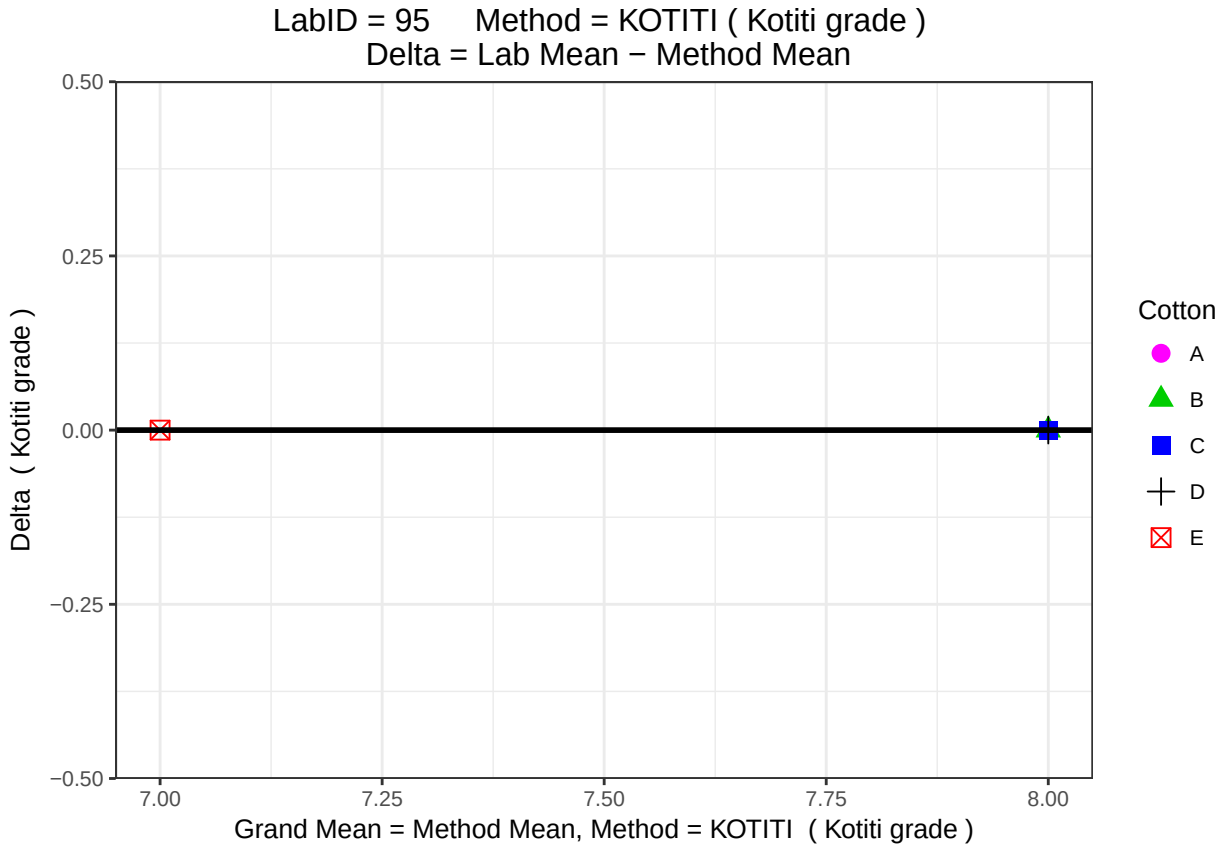

LabID = 60 Method = H2SD (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
10
0
−10
−20
0
10
20
30
40
Grand Mean = Method Mean, Method = H2SD (Sticky points)
Cotton
A
B
C
D
E


LabID = 105 Method = H2SD (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
10
0
−10
−20
0
10
20
30
40
Grand Mean = Method Mean, Method = H2SD (Sticky points)
Cotton
A
B
C
D
E

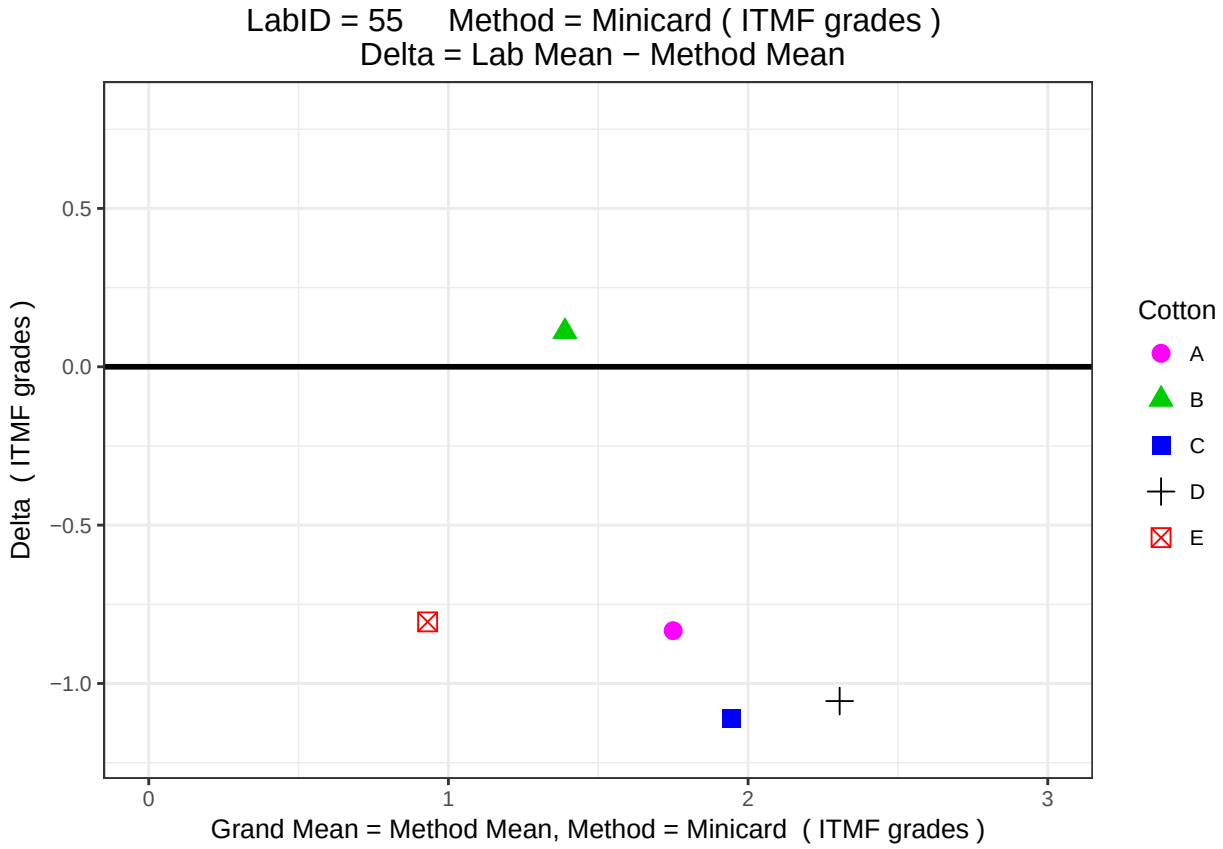
CSITC type chart for Method HSI-NIR

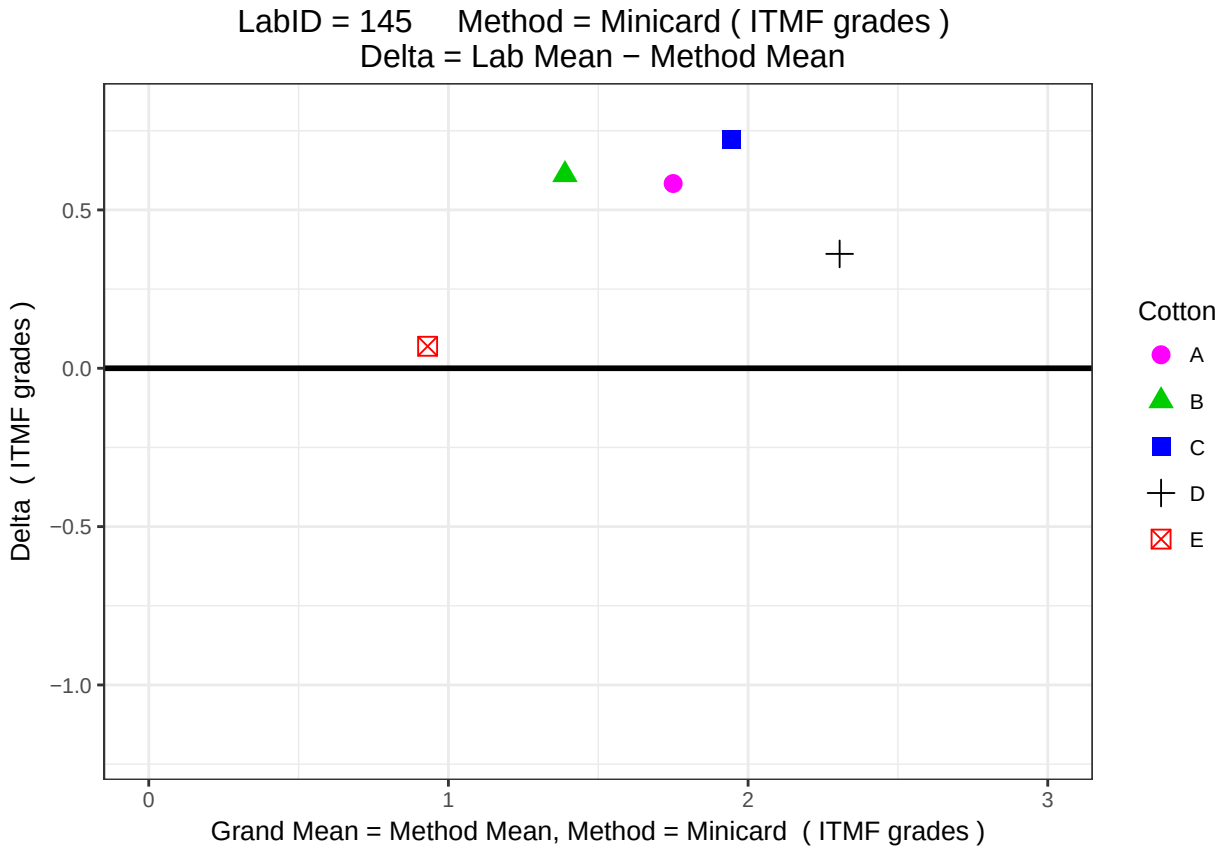


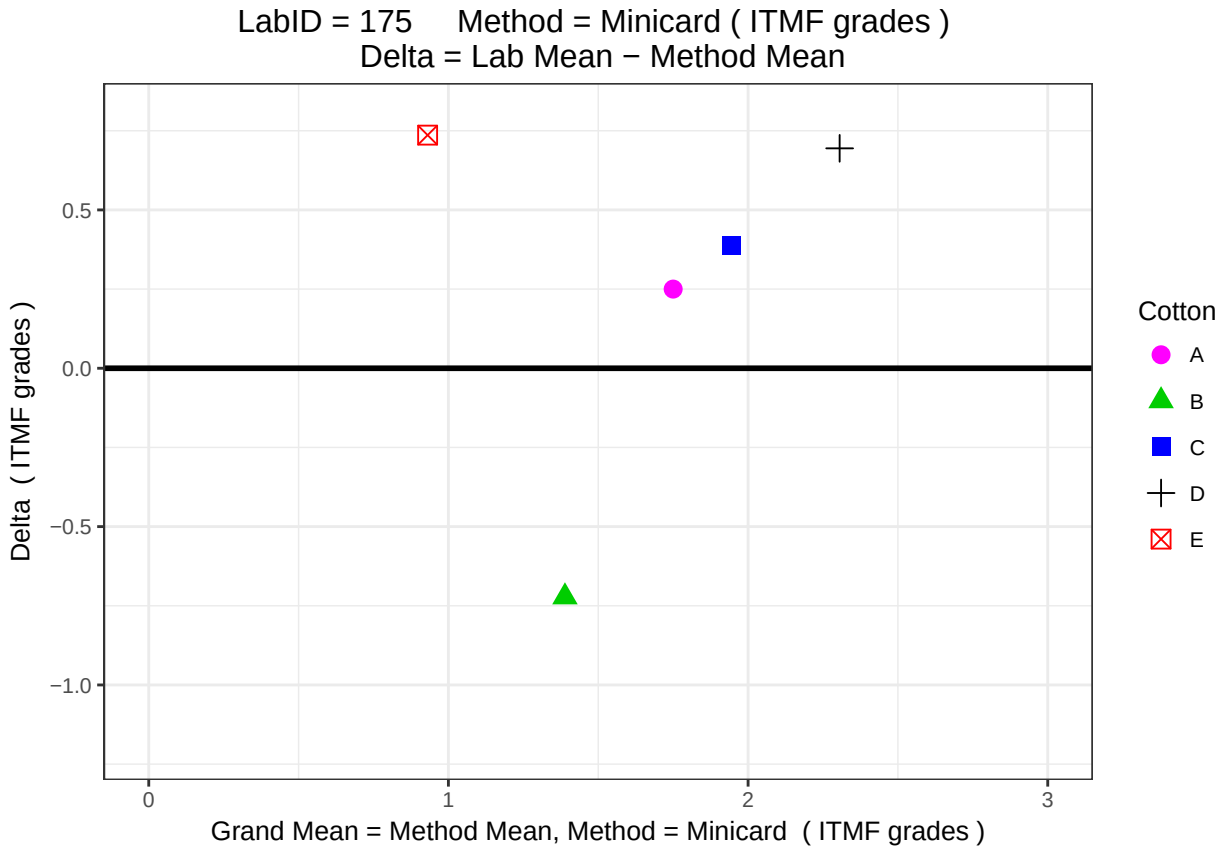
CSITC type chart for Method KOTITI



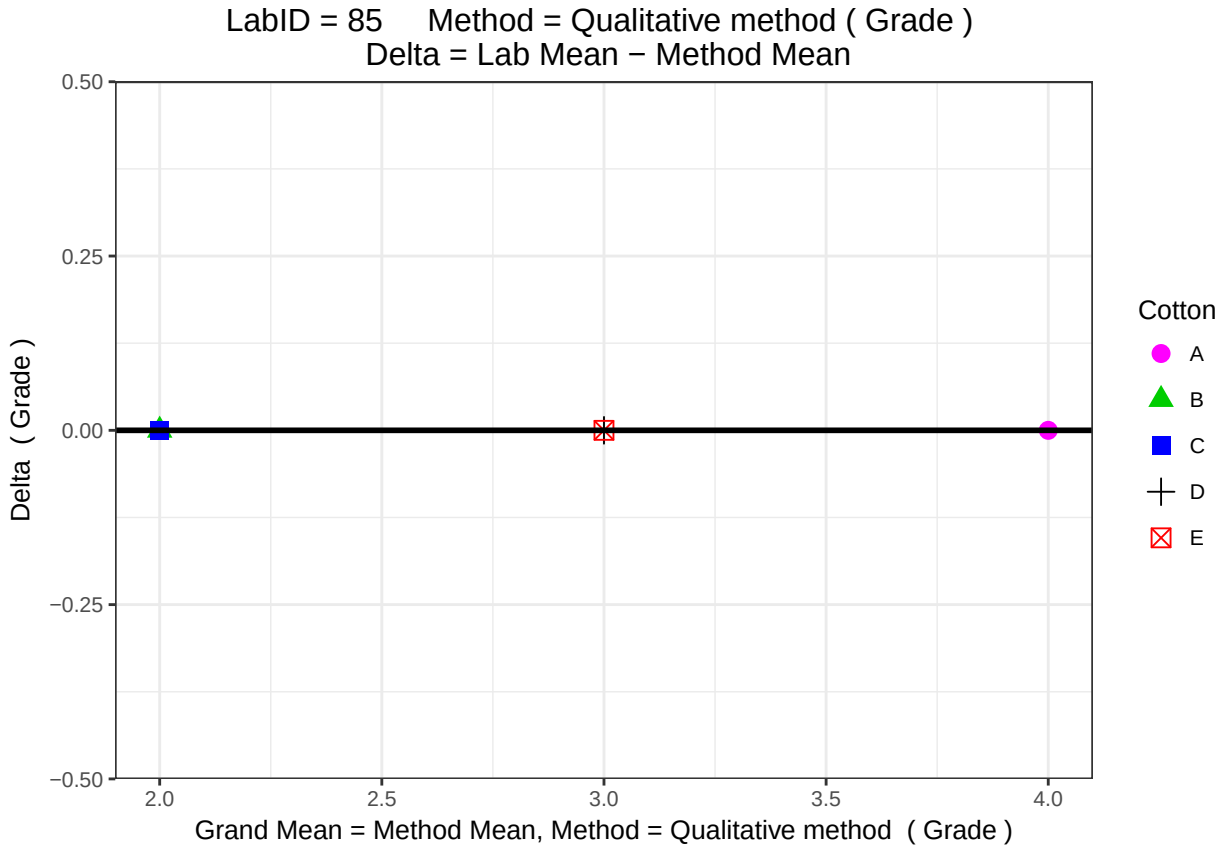
CSITC type chart for Method Minicard



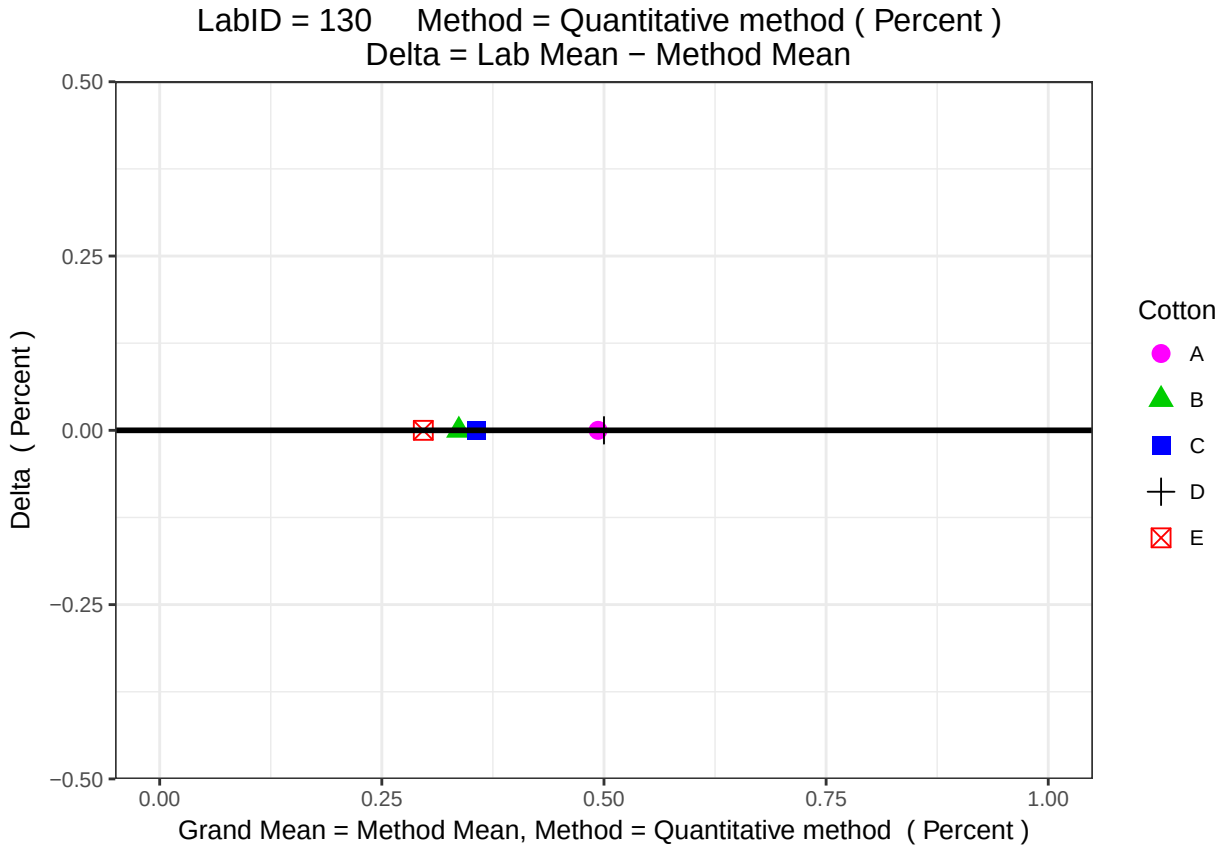

LabID = 145 Method = Minicard (ITMF grades)
Delta = Lab Mean − Method Mean
Delta (ITMF grades)
0.5
0.0
−0.5
−1.0
0
1
2
3
Grand Mean = Method Mean, Method = Minicard (ITMF grades)
Cotton
A
B
C
D
E


LabID = 175 Method = Minicard (ITMF grades)
Delta = Lab Mean − Method Mean
Delta (ITMF grades)
0.5
0.0
−0.5
−1.0
0
1
2
3
Grand Mean = Method Mean, Method = Minicard (ITMF grades)
Cotton
A
B
C
D
E

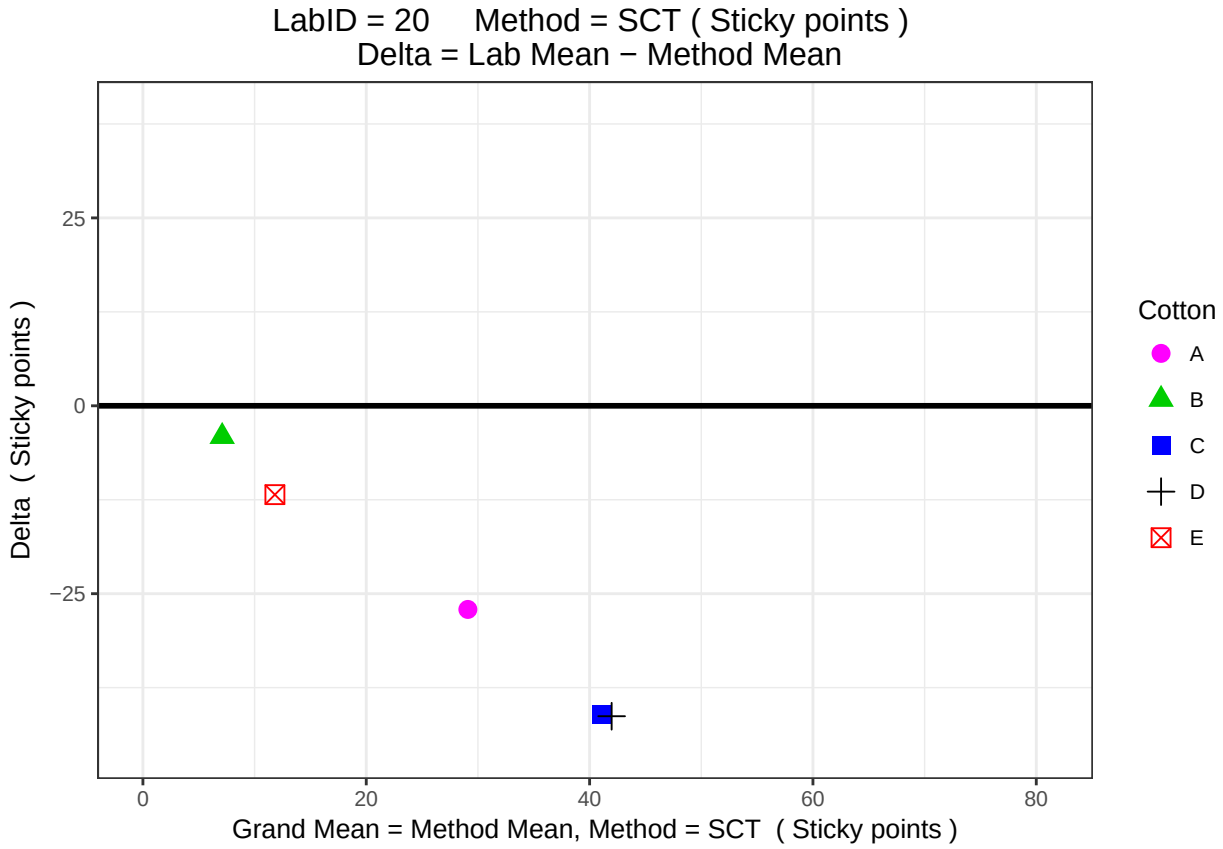
CSITC type chart for Method Qualitative method

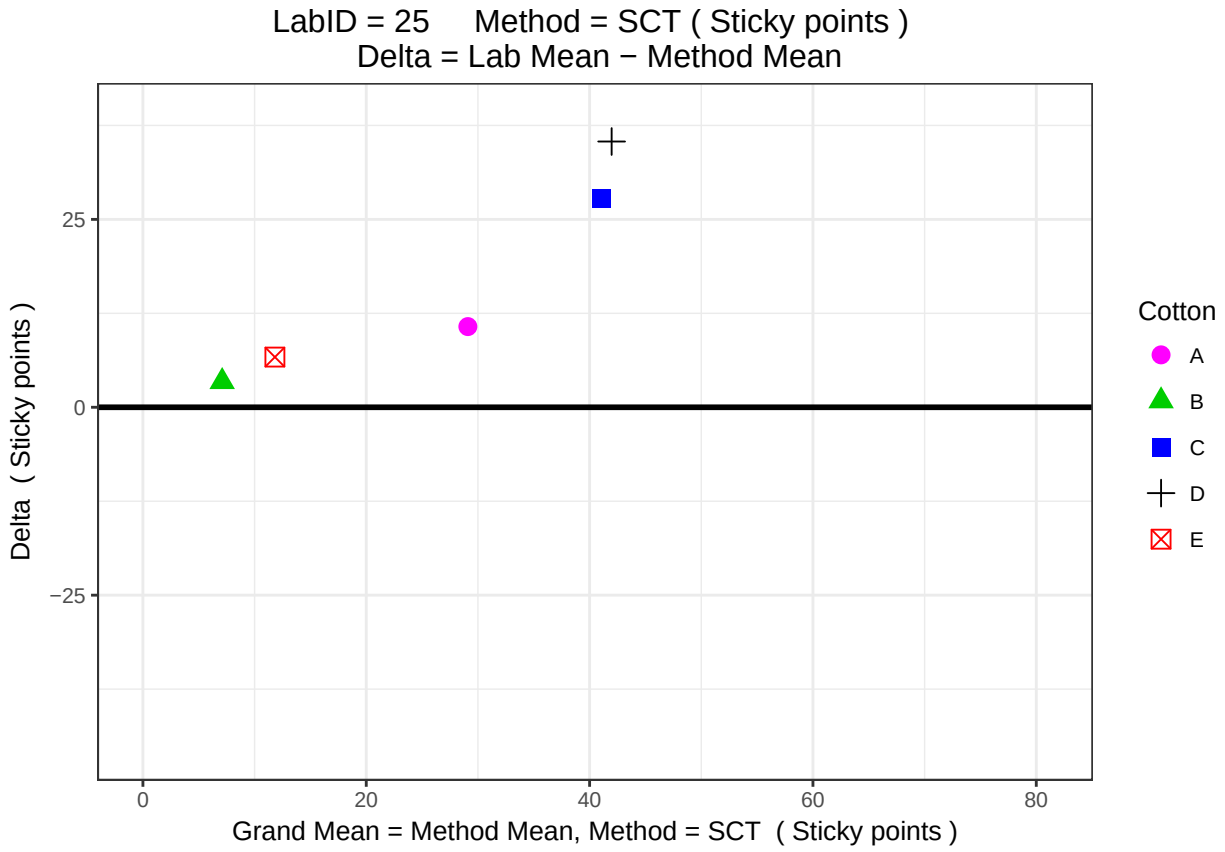


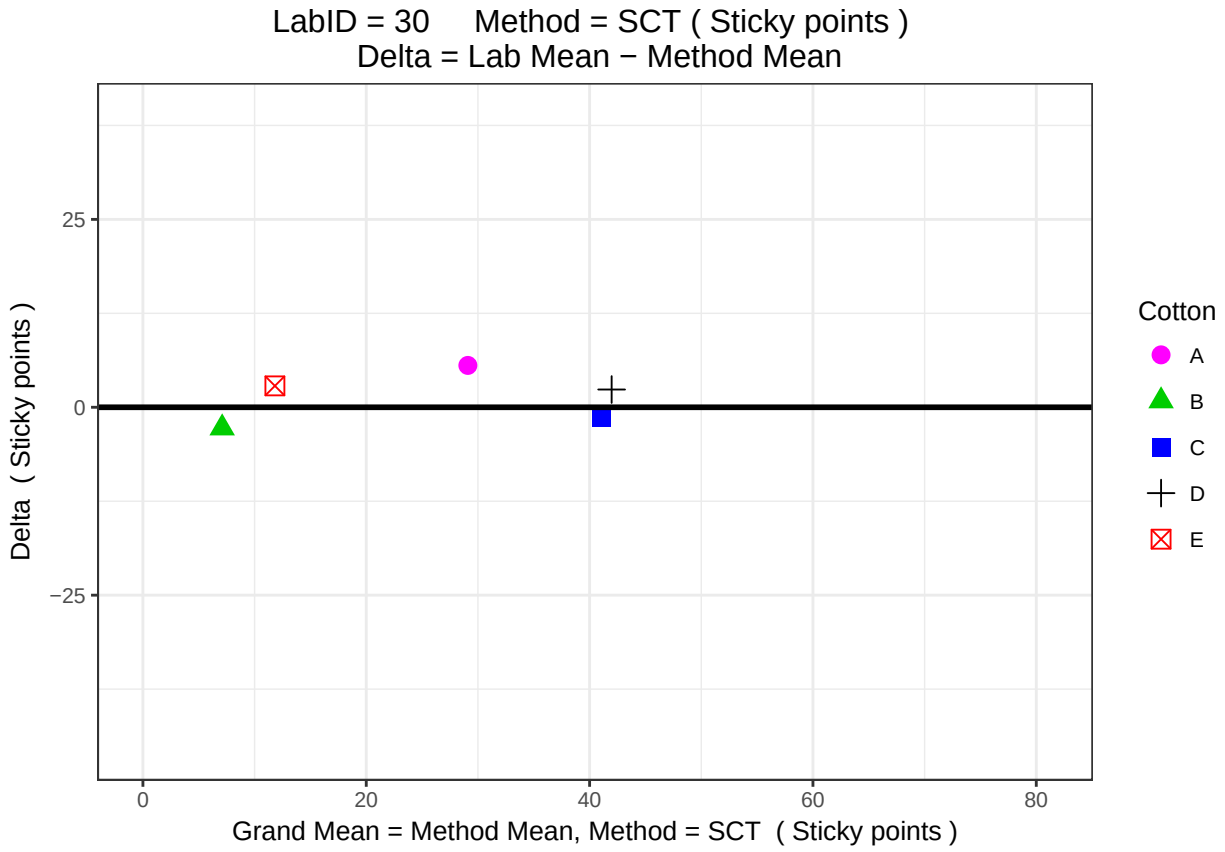
CSITC type chart for Method Quantitative method

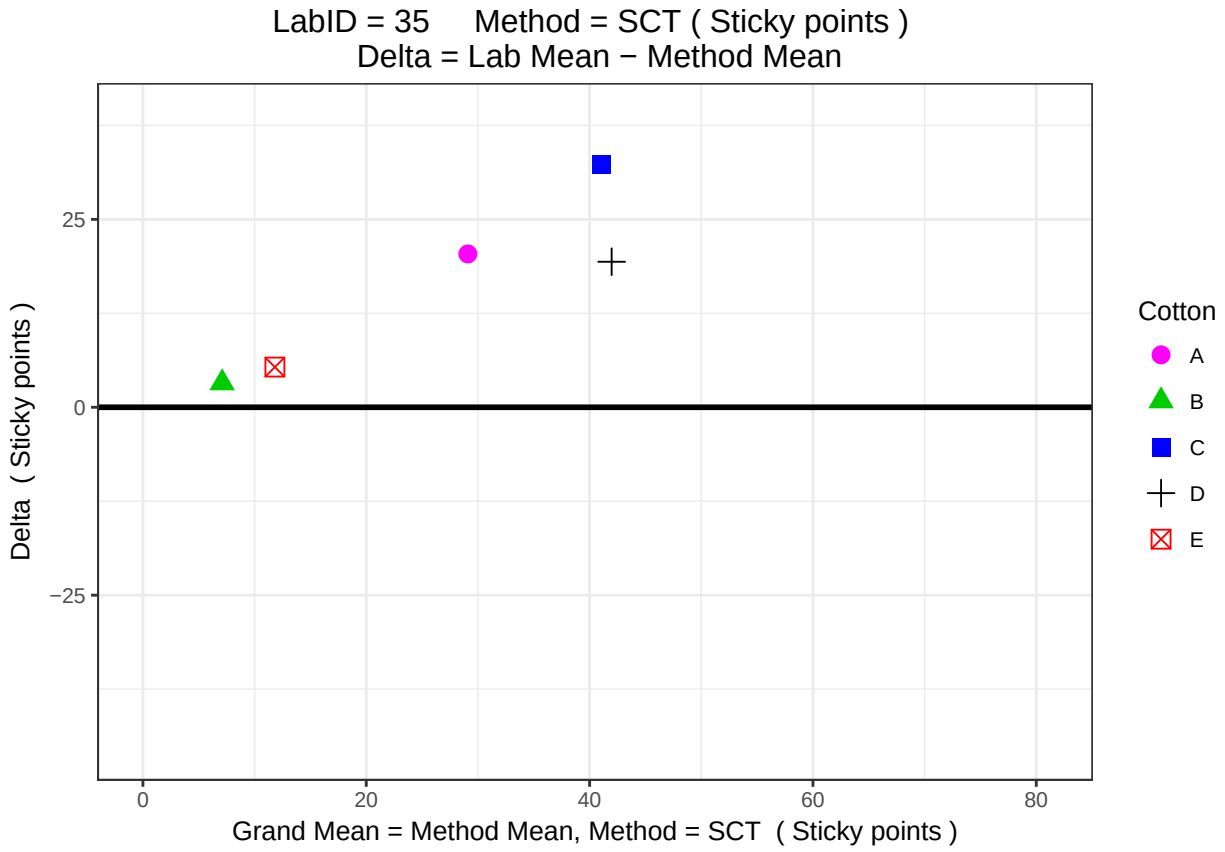


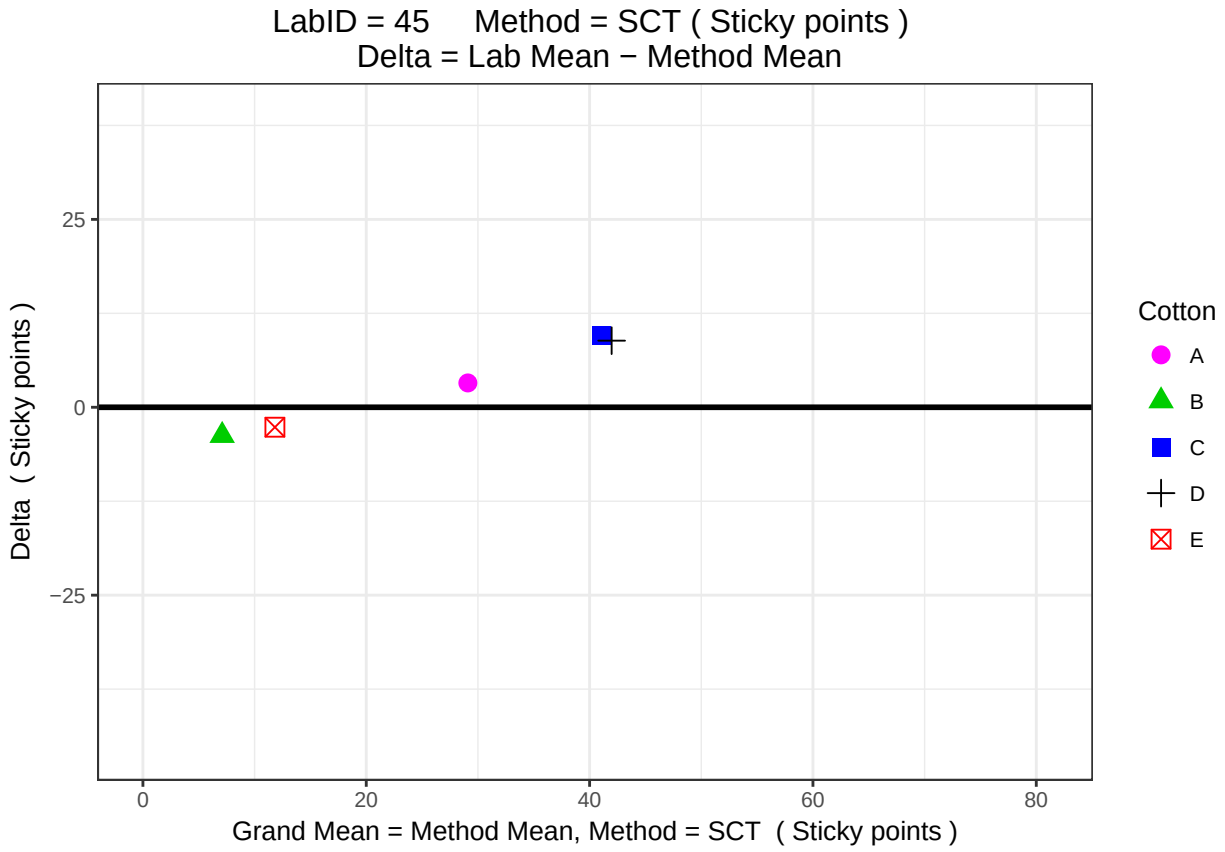
CSITC type chart for Method SCT

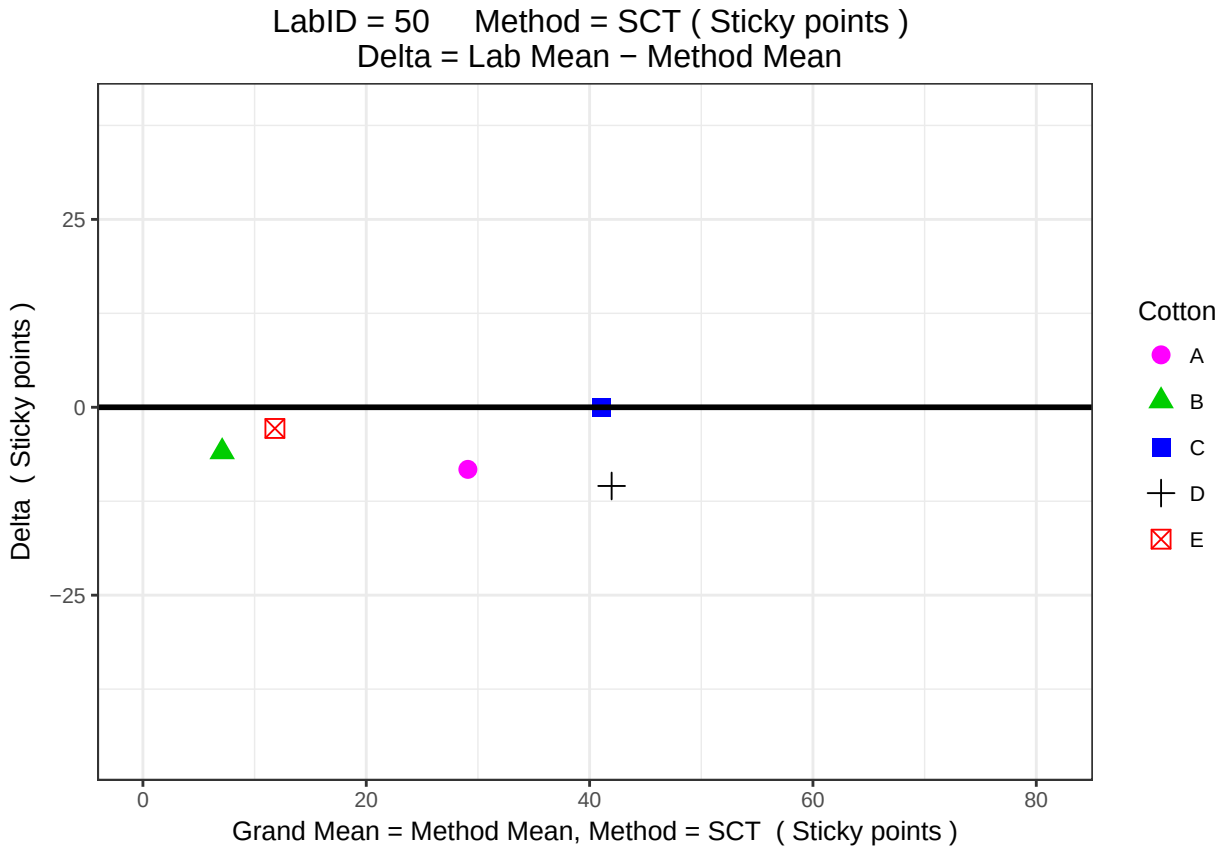


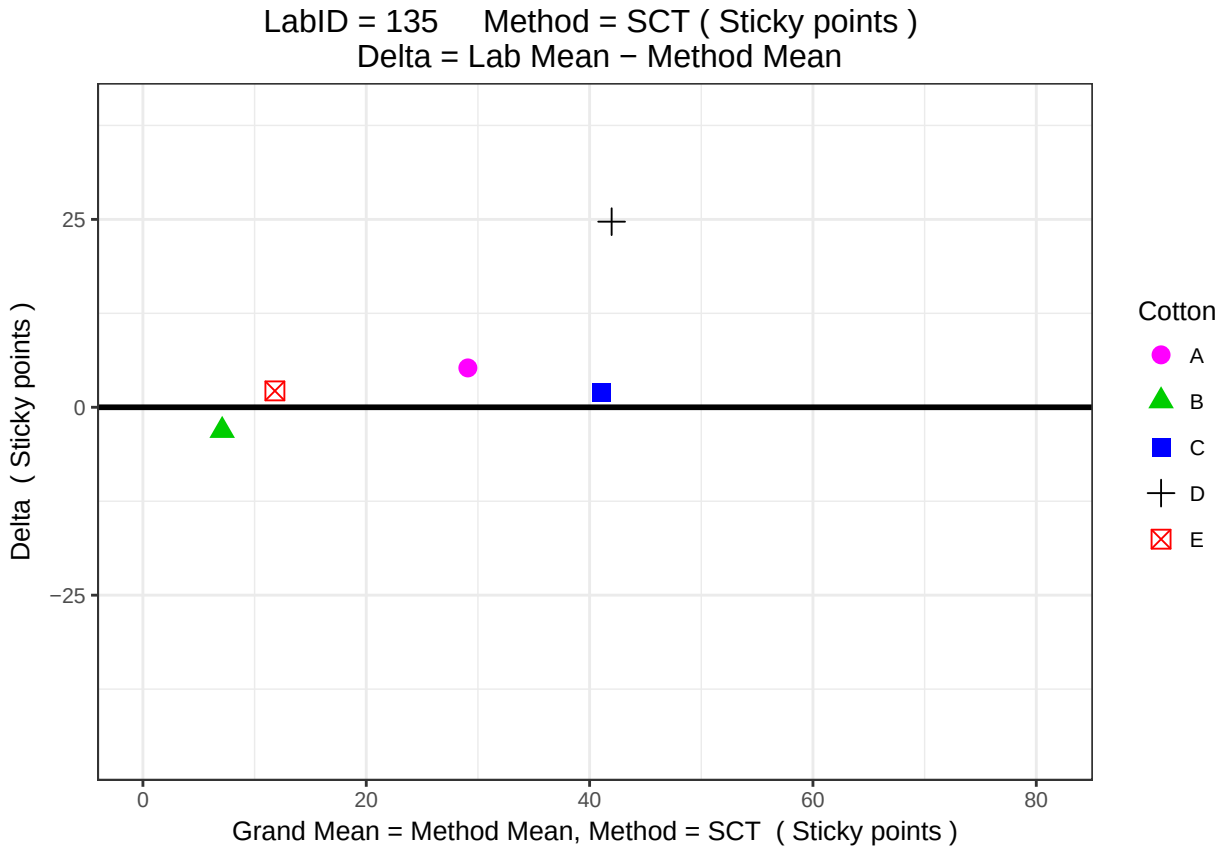

LabID = 25 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

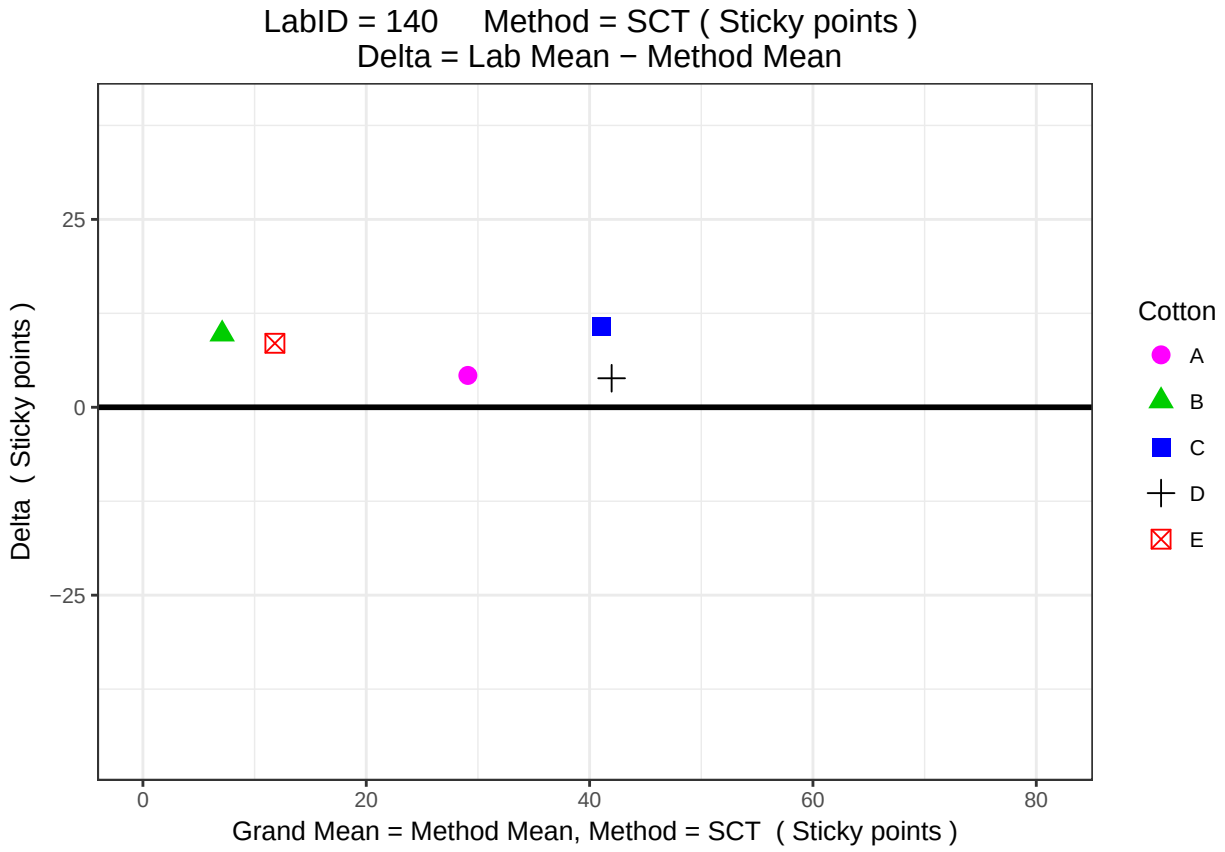

LabID = 30 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

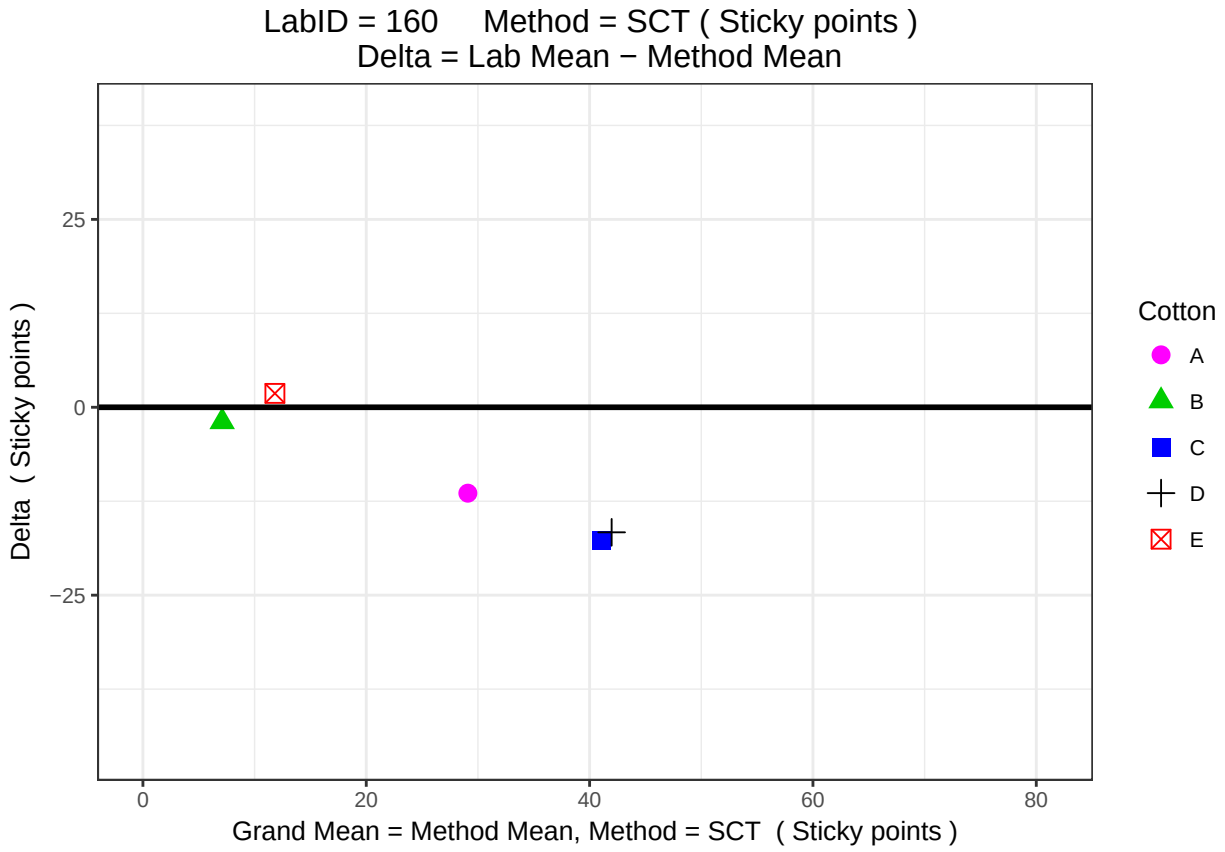

LabID = 35 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

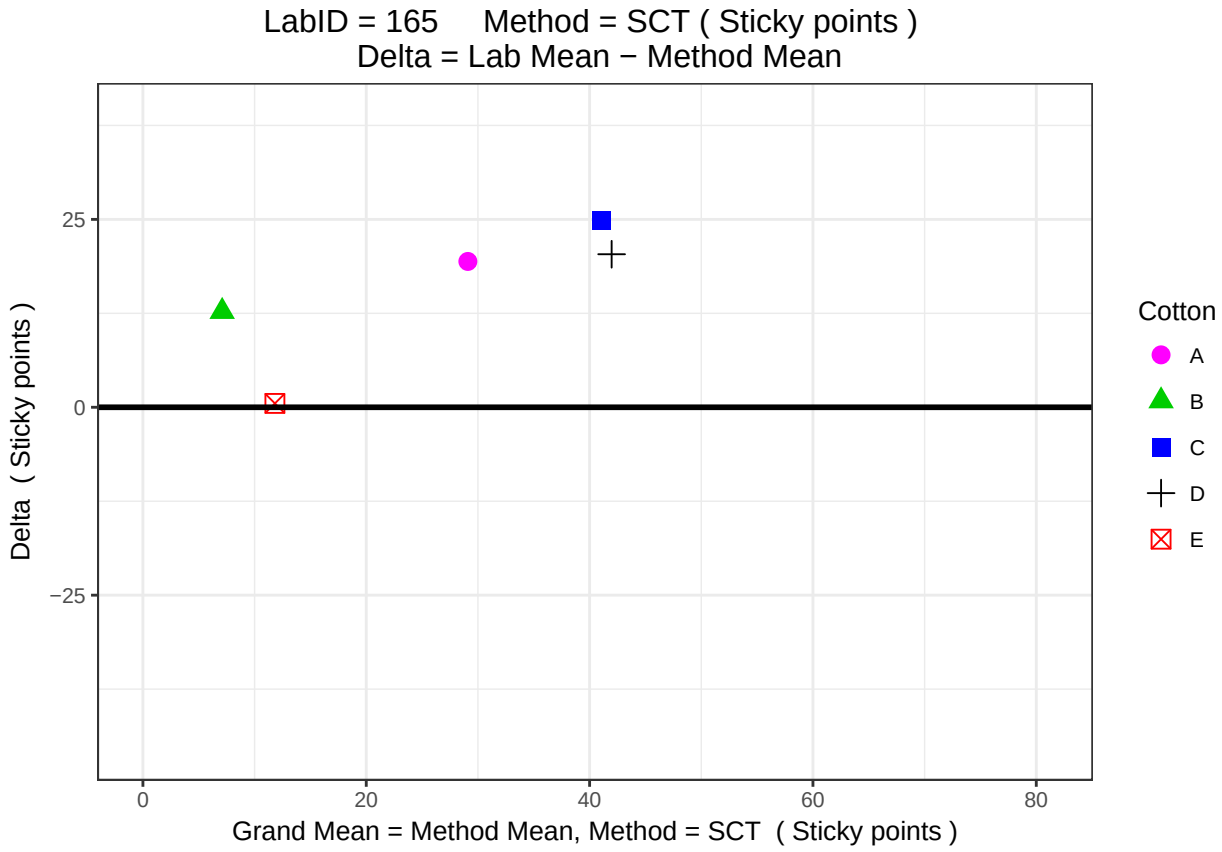

LabID = 45 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

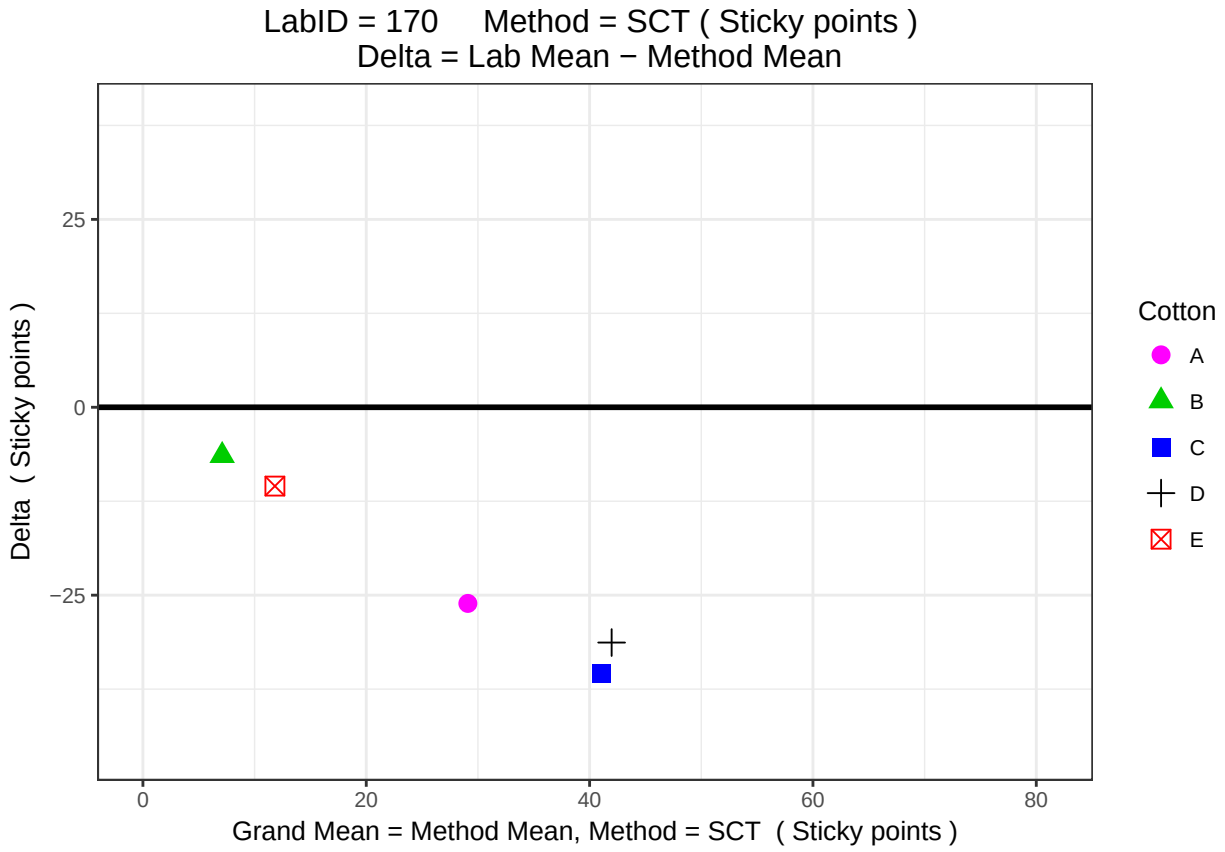

LabID = 50 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

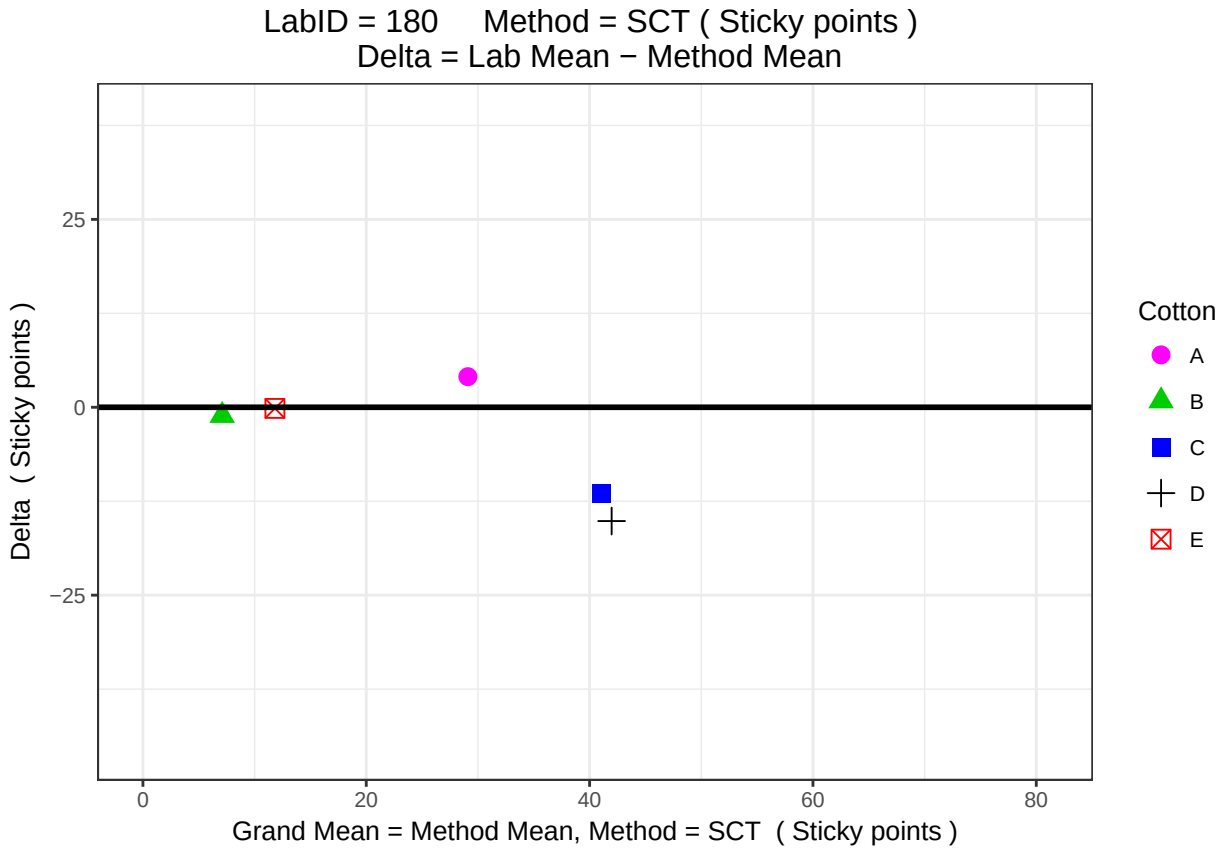

LabID = 135 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E


LabID = 140 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

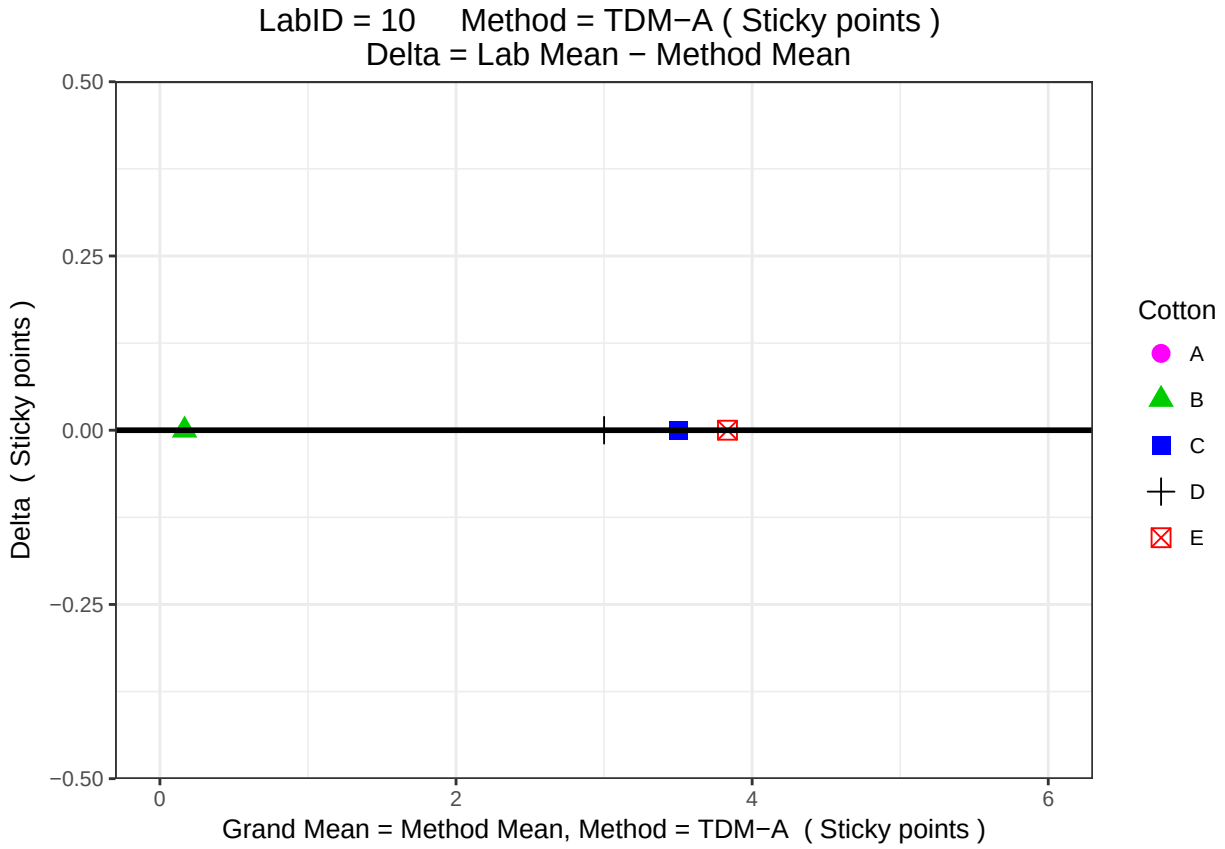

LabID = 160 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E


LabID = 165 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E


LabID = 170 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E


LabID = 180 Method = SCT (Sticky points)
Delta = Lab Mean − Method Mean
Delta (Sticky points)
25
0
−25
0
20
40
60
80
Grand Mean = Method Mean, Method = SCT (Sticky points)
Cotton
A
B
C
D
E

CSITC type chart for Method TDM-A



CommonScale [7]

Principle

In ITMF-ICCTM meeting organized in March 2018 in Bremen, it was envisaged to compare results from various stickiness methods to check how close are the gained results. A proposal using a pro-rata approach was made as one way to achieve this comparison. The following table gives the numeric values to which each and all results from this round-test were calculated whith the following formula: $CommonScale = \frac{LabID\ \ reading\ * \ 100}{MaxEver\ \ for\ \ this\ \ method}$, with MaxEver being the maximum value that any given method could read for the most sticky cotton ever.

Method	MaxEver	Unit
Caramelization	7.0	Color degree
Clinitest	4.0	Color Chart
Contest-Fibermap	750.0	C/F GRADE
GB/T13785-1992	4.0	Color degree
H2SD	70.0	Sticky points
HSI-NIR	150.0	Sticky points
KOTITI	9.0	Kotiti grade
Minicard	3.0	ITMF grades
Qualitative method	4.0	Grade
Quantitative method	1.2	Percent
SCT	150.0	Sticky points
TDM-A	10.0	Sticky points

For instance,

- a reading of 2 at the minicard, with a MaxEver set at 3, will convert into a CommonScale reading of: $67 = \frac{2 \ * \ 100}{3}$.
- a reading of 63 at the SCT, with a MaxEver set at 150, will convert into a CommonScale reading of: $42 = \frac{63 \ * \ 100}{150}$.
- *etc.*

[7] Footnote

* In the following charts, ML stands for the code Method x LabID.
* In the following charts, LM stands for the code LabID x Method.
* NA excluded
* Black dashed line = Method MeanInterLab per cotton and per Method.
* Red + = Laboratory mean for the given method and for the given cotton.
* Black x = Laboratory or CommonScale reading or individual reading for the given method and for the given cotton.

Limitations of the CommonScale approach

This approach has potential limitations:

- The resolution of CommonScale results is not equivalent for methods having a discrete scale, especially when the number of levels is low (for instance, levels for minicard stickiness grading is limited to 4 [0, 1, 2 and 3]) letting the corresponding CommonScale limited to 0, 33, 67 and 100 results. In the same time, other methods having counts expressed in sticky points on extended scales have lot more possibilities, as well as method being able to measure according to a continuous scale.

- It **only is safe to compare methods that are measuring the same single phenomenon, stickiness, or phenomenons that are related to stickiness.** At this point in time, it is not given that all present methods are measuring 'stickiness' or criterion that are related to stickiness.

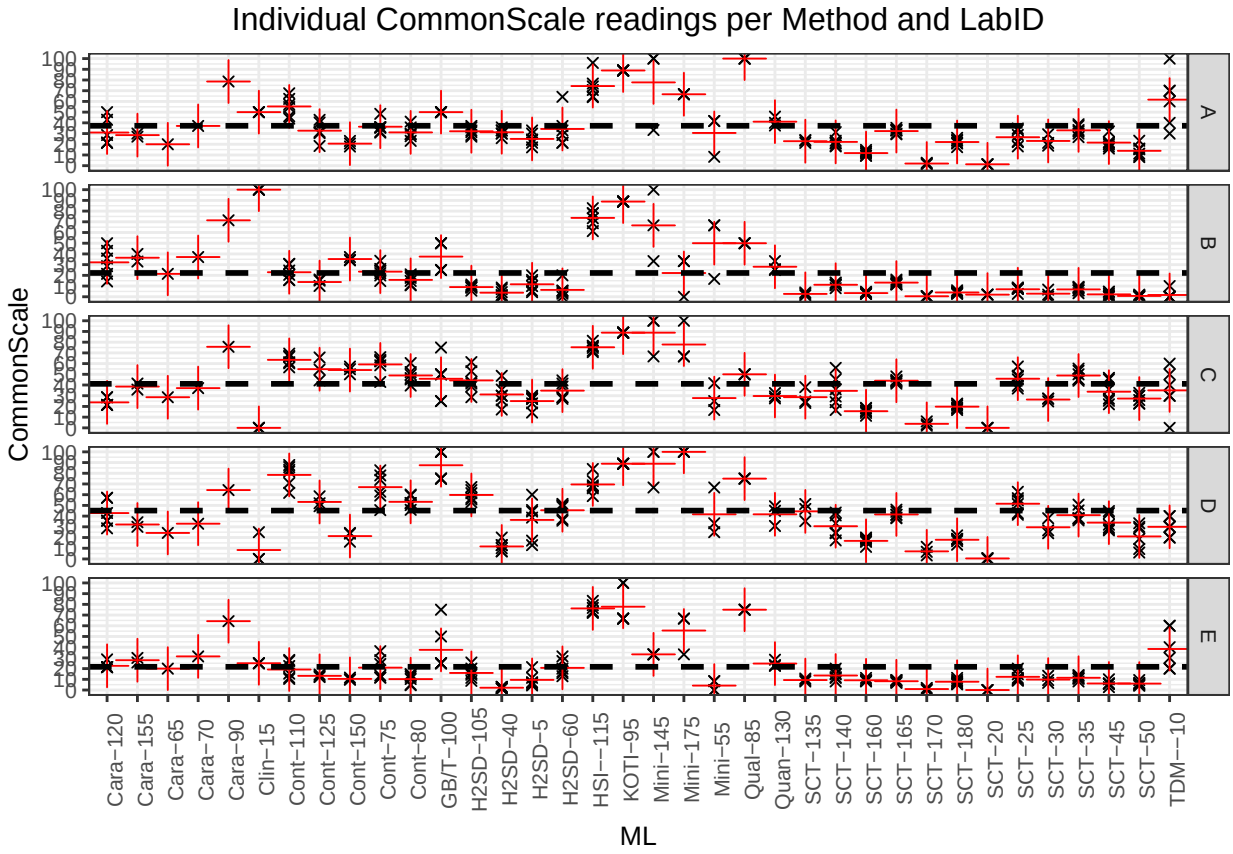
- This CommonScale approach provides results that still are cotton dependent.

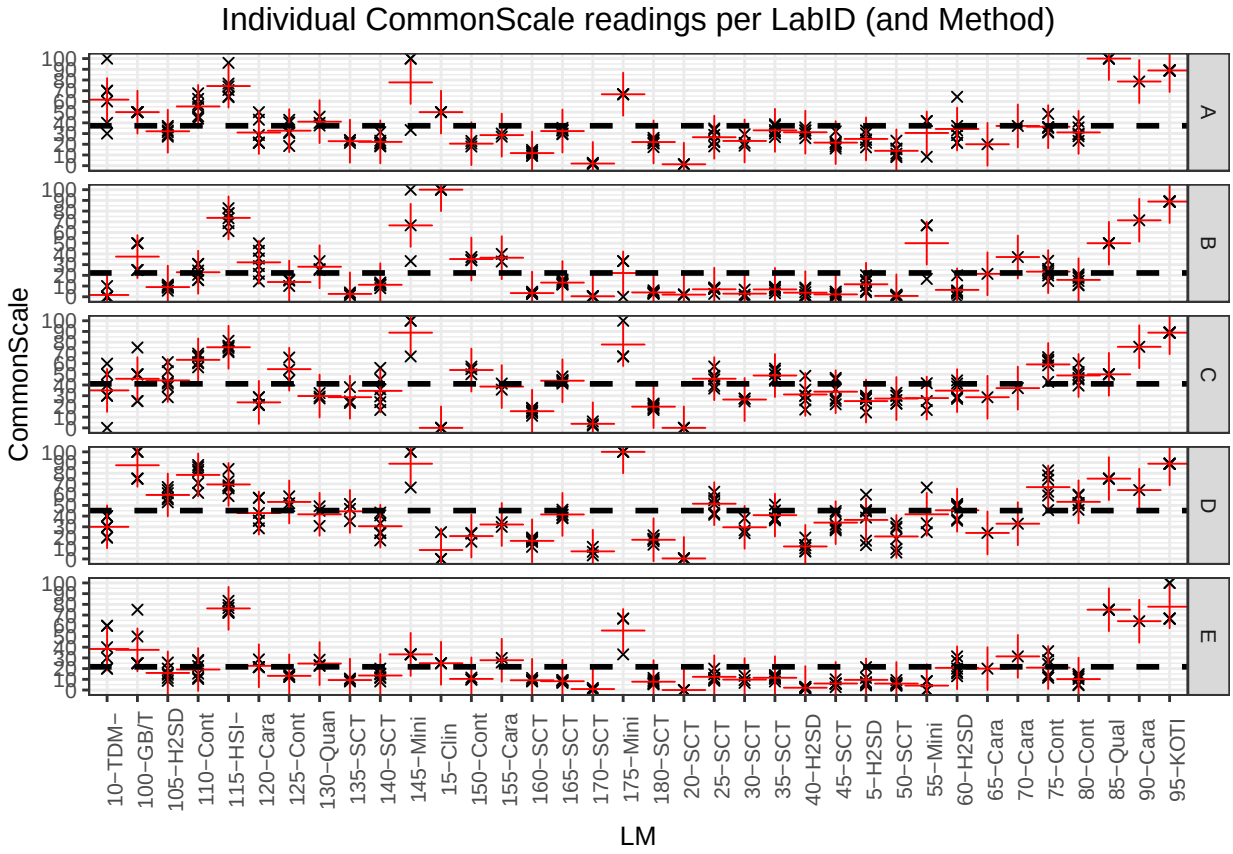
- This CommonScale approach may squeeze the scale for lower or highly stickiness contaminated cottons.

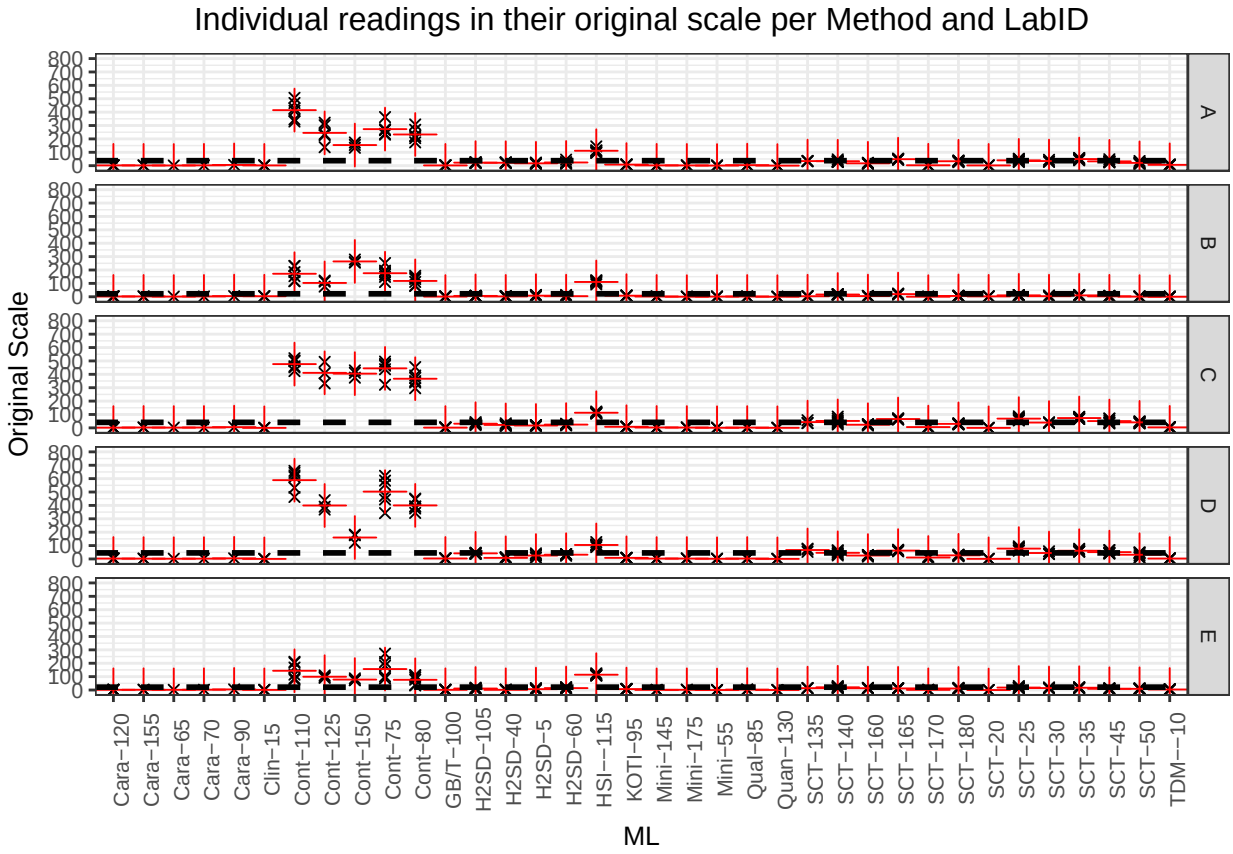
- This CommonScale approach may therefore have incidence on precision and accuracy of gained results.

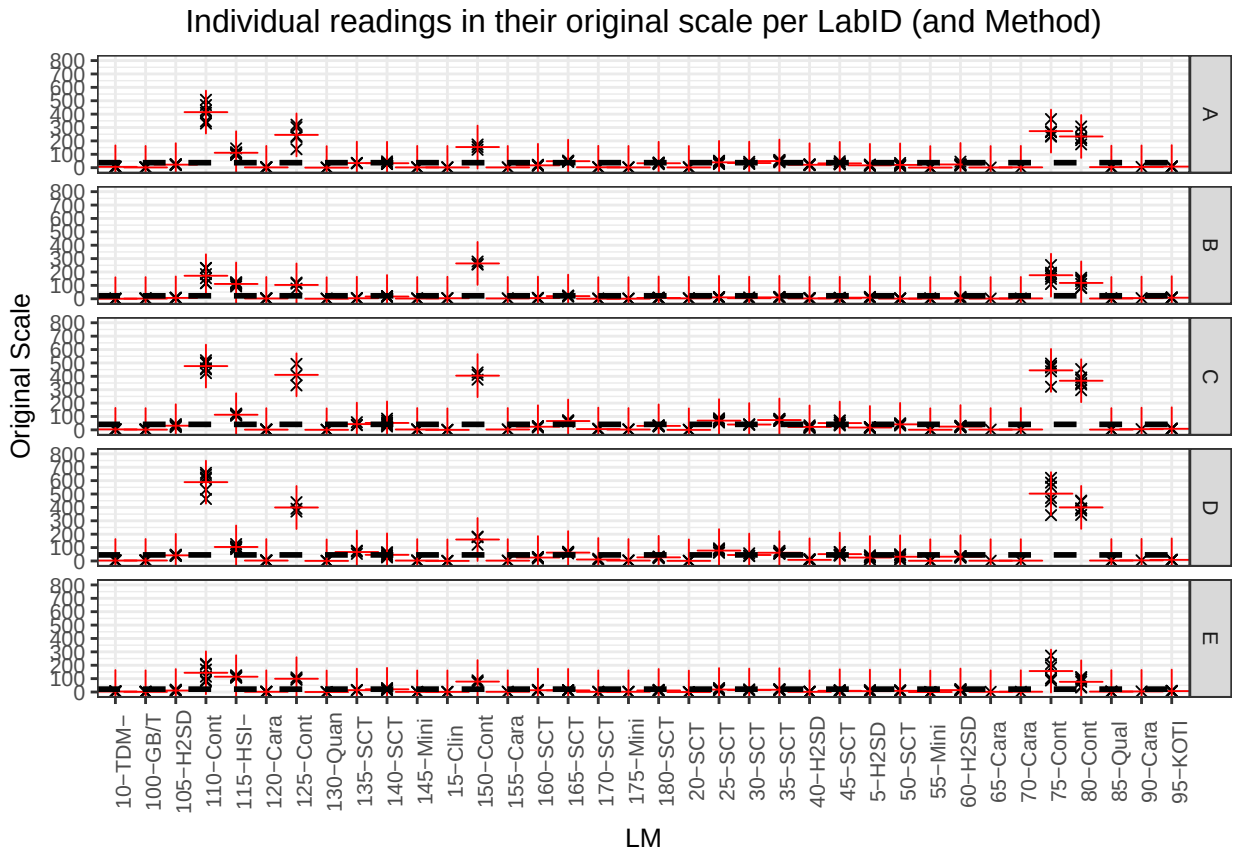
As a conclusion, CommonScale will be experimented at least for some round-tests in order to see if it could help Manufacturers and Users ***to get closer and closer results for each method for the same cottons over time.*** On the long run, the ability of each method to characterize stickiness in its strict sense will have to be evaluated to go further in the harmonization process (it could be by restricting some method(s) to be present in this round-test if they do not predict well enough stickiness troubles: a procedure has to be developed accordingly).

CommonScale charts


Individual CommonScale readings per Method and LabID
CommonScale
A
B
C
D
E
Cara−120
Cara−155
Cara−65
Cara−70
Cara−90
Clin−15
Cont−110
Cont−125
Cont−150
Cont−75
Cont−80
GB/T−100
H2SD−105
H2SD−40
H2SD−5
H2SD−60
HSI−−115
KOTI−95
Mini−145
Mini−175
Mini−55
Qual−85
Quan−130
SCT−135
SCT−140
SCT−160
SCT−165
SCT−170
SCT−180
SCT−20
SCT−25
SCT−30
SCT−35
SCT−45
SCT−50
TDM−−10
ML


Individual CommonScale readings per LabID (and Method)
CommonScale
LM
A
B
C
D
E
10−TDM−
100−GB/T
105−H2SD
110−Cont
115−HSI−
120−Cara
125−Cont
130−Quan
135−SCT
140−SCT
145−Mini
15−Clin
150−Cont
155−Cara
160−SCT
165−SCT
170−SCT
175−Mini
180−SCT
20−SCT
25−SCT
30−SCT
35−SCT
40−H2SD
45−SCT
5−H2SD
50−SCT
55−Mini
60−H2SD
65−Cara
70−Cara
75−Cont
80−Cont
85−Qual
90−Cara
95−KOTI


Individual readings in their original scale per Method and LabID
Original Scale
ML
A
B
C
D
E
Cara−120
Cara−155
Cara−65
Cara−70
Cara−90
Clin−15
Cont−110
Cont−125
Cont−150
Cont−75
Cont−80
GB/T−100
H2SD−105
H2SD−40
H2SD−5
H2SD−60
HSI−−115
KOTI−95
Mini−145
Mini−175
Mini−55
Qual−85
Quan−130
SCT−135
SCT−140
SCT−160
SCT−165
SCT−170
SCT−180
SCT−20
SCT−25
SCT−30
SCT−35
SCT−45
SCT−50
TDM−−10


Individual readings in their original scale per LabID (and Method)
Original Scale
LM
A
B
C
D
E
10−TDM−
100−GB/T
105−H2SD
110−Cont
115−HSI−
120−Cara
125−Cont
130−Quan
135−SCT
140−SCT
145−Mini
15−Clin
150−Cont
155−Cara
160−SCT
165−SCT
170−SCT
175−Mini
180−SCT
20−SCT
25−SCT
30−SCT
35−SCT
40−H2SD
45−SCT
5−H2SD
50−SCT
55−Mini
60−H2SD
65−Cara
70−Cara
75−Cont
80−Cont
85−Qual
90−Cara
95−KOTI

Overall statistics per Cotton and Method [8]

The following tables provide information about observed variations between results of various instruments within each method, for each of all used methods and for each and all cottons used in this round-test.

- Comparing the CVs between the lines of these tables - meaning comparing methods for each cotton - is not helpfull at all, as units used are very different between methods (so different that it has been necessary to create the CommonScale approach just displayed above to get a way of comparing results).

- However seing the evolution of these CV values over time will inform about the degree of harmonization achieved for this measurement, method by method. A decrease of the CV values between instruments for each method - which is expected over time - will give indications about the degree of care taken by Laboratories and Manufacturers to harmonize results over time for their method.

[8] Footnote

* NA or NaN excluded from the orginal raw data * NA appears in the following tables when less that two laboratories provided data for the given cotton and method

* Mean and Standard Deviation expressed in Unit, CV expressed in %

Mean, standard deviation and CV between instruments by method, Cotton A

Method	MeanInterLab	SdInterLab	CVInterLab	Unit
Caramelization	2.7	1.6	58.7	Color degree
Clinitest	2.0	NA	NA	Color Chart
Contest-Fibermap	264.0	95.2	36.1	C/F GRADE
GB/T13785-1992	2.0	NA	NA	Color degree
H2SD	21.5	2.8	13.0	Sticky points
HSI-NIR	111.5	NA	NA	Sticky points
KOTITI	8.0	NA	NA	Kotiti grade
Minicard	1.8	0.7	42.3	ITMF grades
Qualitative method	4.0	NA	NA	Grade
Quantitative method	0.5	NA	NA	Percent
SCT	29.1	15.4	53.1	Sticky points
TDM-A	6.2	NA	NA	Sticky points

Mean, standard deviation and CV between instruments by method, Cotton B

Method	MeanInterLab	SdInterLab	CVInterLab	Unit
Caramelization	2.8	1.3	47.4	Color degree
Clinitest	4.0	NA	NA	Color Chart
Contest-Fibermap	166.7	63.1	37.9	C/F GRADE
GB/T13785-1992	1.5	NA	NA	Color degree
H2SD	5.4	2.4	43.7	Sticky points
HSI-NIR	110.5	NA	NA	Sticky points
KOTITI	8.0	NA	NA	Kotiti grade
Minicard	1.4	0.7	48.5	ITMF grades
Qualitative method	2.0	NA	NA	Grade
Quantitative method	0.3	NA	NA	Percent
SCT	7.1	6.1	85.9	Sticky points
TDM-A	0.2	NA	NA	Sticky points

Mean, standard deviation and CV between instruments by method, Cotton C

Method	MeanInterLab	SdInterLab	CVInterLab	Unit
Caramelization	2.9	1.4	50.2	Color degree
Clinitest	0.0	NA	NA	Color Chart
Contest-Fibermap	420.7	41.4	9.8	C/F GRADE
GB/T13785-1992	1.8	NA	NA	Color degree
H2SD	23.7	5.6	23.9	Sticky points
HSI-NIR	112.8	NA	NA	Sticky points
KOTITI	8.0	NA	NA	Kotiti grade
Minicard	1.9	1.0	50.2	ITMF grades
Qualitative method	2.0	NA	NA	Grade
Quantitative method	0.4	NA	NA	Percent
SCT	41.1	23.4	57.0	Sticky points
TDM-A	3.5	NA	NA	Sticky points

Mean, standard deviation and CV between instruments by method, Cotton D

Method	MeanInterLab	SdInterLab	CVInterLab	Unit
Caramelization	2.7	1.1	39.3	Color degree
Clinitest	0.3	NA	NA	Color Chart
Contest-Fibermap	410.2	160.7	39.2	C/F GRADE
GB/T13785-1992	3.5	NA	NA	Color degree
H2SD	26.8	14.1	52.7	Sticky points
HSI-NIR	104.3	NA	NA	Sticky points
KOTITI	8.0	NA	NA	Kotiti grade
Minicard	2.3	0.9	40.3	ITMF grades
Qualitative method	3.0	NA	NA	Grade
Quantitative method	0.5	NA	NA	Percent
SCT	42.0	23.5	55.9	Sticky points
TDM-A	3.0	NA	NA	Sticky points

Mean, standard deviation and CV between instruments by method, Cotton E

Method	MeanInterLab	SdInterLab	CVInterLab	Unit
Caramelization	2.3	1.3	53.9	Color degree
Clinitest	1.0	NA	NA	Color Chart
Contest-Fibermap	110.8	37.4	33.7	C/F GRADE
GB/T13785-1992	1.5	NA	NA	Color degree
H2SD	8.5	5.6	66.7	Sticky points
HSI-NIR	114.3	NA	NA	Sticky points
KOTITI	7.0	NA	NA	Kotiti grade
Minicard	0.9	0.8	83.1	ITMF grades
Qualitative method	3.0	NA	NA	Grade
Quantitative method	0.3	NA	NA	Percent
SCT	11.8	6.2	52.7	Sticky points
TDM-A	3.8	NA	NA	Sticky points

Frequently asked questions [9]

Q: Correlation matrix are sometimes difficult to read due to formatting; is there any improvement possible?
A: We search for a solution, probably for next RT. Sorry for the inconvenience in the meantime.

To be complemented.

[9] Footnote

* Based on all round-tests carried out already.

Software components to realize this report [10]

Software code version: September 6, 2018 by Jean-Paul Gourlot

R version 3.4.3 (2017-11-30) Platform: x86_64-w64-mingw32/x64 (64-bit) Running under: Windows 7 x64 (build 7601) Service Pack 1

Matrix products: default

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[3] LC_MONETARY=French_France.1252 LC_NUMERIC=C
[5] LC_TIME=French_France.1252

attached base packages: [1] grid stats graphics grDevices utils datasets methods
[8] base

other attached packages: [1] rmarkdown_1.8 markdown_0.8 ggplot2_2.2.1 reshape2_1.4.3 [5] xlsx_0.5.7 xlsxjars_0.6.1 rJava_0.9-9 knitr_1.18
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loaded via a namespace (and not attached): [1] Rcpp_0.12.12 magrittr_1.5 munsell_0.4.3 colorspace_1.3-2
[5] rlang_0.1.2 rematch_1.0.1 highr_0.6 stringr_1.2.0
[9] plyr_1.8.4 tools_3.4.3 gtable_0.2.0 htmltools_0.3.6 [13] rprojroot_1.2 yaml_2.1.14 lazyeval_0.2.0 digest_0.6.12
[17] tibble_1.3.4 evaluate_0.10.1 labeling_0.3 stringi_1.1.5
[21] compiler_3.4.3 cellranger_1.1.0 backports_1.1.1 scales_0.5.0

[10] Footnote
* List of all R components for processing the data

[1] “RTStick 2018-1_Long_2018-09-07_Raw”